

TOOELE ARMORY
HYDRONIC BOILER SYSTEM AND
DOMESTIC WATER PIPING UPGRADE
DFCM PROJECT NO. 06271470
TOOELE, UTAH



State of Utah—Department of Administrative Services

**DIVISION OF FACILITIES CONSTRUCTION
AND MANAGEMENT**

4110 State Office Building / Salt Lake City, Utah 84114 / 538-3018

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DFCM DESIGN AND CODE CRITERIA

(Fee A.E: Attach and fill in applicable data for each drawing submittal)

Applicable Codes: _____ Year _____
International Building Code _____ 2003
International Mechanical Code _____ 2003
Planning & Design Criteria to Prevent _____
Architectural Barriers for the Aged and _____
the Physically Handicapped. _____
International Plumbing Code _____ 2003
Ashrae/IES Energy Code _____ 2001
National Electrical Code _____ 2002

A. Occupancy and Group : B / S-1 _____
Change in Use : Yes _____ No ☒ Mixed Occupancy : Yes ☒ No _____

B. Type of Construction (Circle) _____
N.A. _____
I F.R. _____ II F.R. _____ III 1 HR. _____ III B _____ III N _____ IV H.T. _____ V 1 HR. _____ V N _____

C. Location on Property : F.R. Ext. Walls (Hrs.): _____ N.R. _____ Ext. Wall Opening(s) Protection (Hrs.) _____ N.R. _____
N.A. _____ Each Occupancy _____

D. Occupancy separation required (Hrs.): _____
Sprinklered: Indicate Yes or No _____
Stories : _____ 1 or multiple _____
a. Actual Area²(ft) EXISTING _____
b. Basic allowable area : _____
c. Allowable Area Increase _____
due to side yards: N _____
% Area (ft²) _____
N.A. _____
% Area (ft) _____
% Area (ft) _____
% Area (ft) _____

d. Side yard area increase (ft): N.A. _____
Accumulative sub-total (b+d): _____
Sprinkler: area increase (x3 single) _____
(x 2 multi) _____


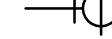








e. Total Allowable Area for a single story: N.A. _____
x 2 for multi-story building: _____
f. Ratio = a/e _____
(Actual divided by allowable) _____

E. Fire-Resistive Requirements _____ (Hrs.): (1 Hr., 2Hr., 3Hr., 4Hr., N. H.T.)
N.A. _____
Exterior Bearing Walls: _____ Floors - Ceiling Floors _____
Interior Bearing Walls: _____ Roofs - Ceiling Roofs _____
Exterior Non-bearing Walls: _____ Exterior Doors and Windows _____
Structural Frame: _____ Shaft Enclosures _____
Partitions - Permanent: _____
(OCCUPANCY SEPARATION - N.A.)

DRAWING INDEX:

- G001 - COVER SHEET
M001 - GENERAL NOTES & LEGEND
MD101 - CRAWL SPACE HEATING HOT WATER PIPING DEMOLITION PLAN
MD102 - MAIN FLOOR HEATING HOT WATER SYSTEM DEMOLITION PLAN
MD103 - MECHANICAL DEMOLITION PHOTOGRAPHS OF EXISTING SYSTEM
MD104 - MECHANICAL DEMOLITION AND UPGRADE PHOTOGRAPHS OF EXISTING SYSTEM
MD401 - BOILER ROOM LARGE SCALE PIPING DEMOLITION PLAN
PD101 - CRAWL SPACE PLUMBING PIPING DEMOLITION PALN
MP101 - NEW CRAWL SPACE MECHANICAL AND PLUMBING PLAN
MP102 - MAIN FLOOR MECHANICAL AND PLUMBING PLAN
MP401 - BOILER ROOM LARGE SCALE PIPING PLAN
MP501 - MECHANICAL DETAILS
MP502 - DETAILS
MP601 - MECHANICAL AND PLUMBING SCHEDULES
MP701 - NEW HEATING HOT WATER FLOW SHEET

PIPING LEGEND

MEANING	SYMBOL OR ABBREVIATION	MEANING	SYMBOL OR ABBREVIATION
HOT WATER LINE	— — — — —	CONNECTION TO EXISTING PIPING	
COLD WATER LINE	— — — — —	BALL VALVE	
WATER PIPING DEMOLITION	— — — — —	UNION	
HEATING HOT WATER SUPPLY	— — — HWS — — —	PRESSURE GAUGE	
HEATING HOT WATER RETURN	— — — HWR — — —	THERMOMETER	
CHECK VALVE	— — —  — — —	BALANCING VALVE	
SUCTION DIFFUSER		NATURAL GAS	— — — G — — —
MAKE UP WATER	— — — MU — — —	DRAIN PIPING	— — — D — — —
CHEMICAL FEED	— — — CF — — —	BACKFLOW PREVENTER	
POINT OF REMOVAL			

MECHANICAL AND PLUMBING GENERAL NOTES:

- G-1 ALL MECHANICAL AND PLUMBING FIXTURES, EQUIPMENT ETC. SHALL BE INSTALLED AND CONFORM TO THE 2003 EDITION OF THE INTERNATIONAL PLUMBING AND MECHANICAL CODES (IPC)(IMC) WITH UTAH ANNOTATIONS AND DFCM REQUIREMENTS.

G-2 ALL PIPING MATERIALS SHALL MEET ALL IPC, IMC AND DFCM REQUIREMENTS.

G-3 ALL MATERIALS SHALL BE NEW AND SHALL BE DOMESTIC MADE.

G-4 PROVIDE VACUUM BREAKERS AND BACK FLOW PREVENTERS WHERE REQUIRED BY CODE OR WHERE THERE MAY BE ANY POSSIBLE CHANCE FOR CROSS CONTAMINATION. PREVENTERS SHALL BE INSTALLED IN ACCORDANCE WITH IPC WITH UTAH AMENDMENTS.

G-5 CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFYING ALL EXISTING CONDITIONS, PIPING LOCATIONS AND OBSTACLES.

G-6 THE DRAWINGS ARE DIAGRAMMATIC. BECAUSE OF THE SMALL SCALE OF THE DRAWING, THEY DO NOT SHOW EVERY OFFSET, BEND OR ELBOW NECESSARY FOR THE COMPLETE INSTALLATION IN THE SPACE PROVIDED. ALL PIPING LOCATIONS SHALL BE COORDINATED WITH THE DRAWINGS AND ACTUAL CONDITIONS.

G-7 ANY AND ALL ALTERATIONS TO THE SYSTEM SHOWN SHALL BE SUBMITTED TO THE ENGINEER IN WRITING PRIOR TO ANY CHANGES. CONTRACTOR SHALL BE RESPONSIBLE IF CHANGES ARE MADE WITHOUT APPROVAL.

G-8 ALL DOMESTIC WATER SYSTEMS SHALL MEET THE REQUIREMENTS OF ANS/NSF STANDARD 61 CONCERNING METAL CONTAMINANTS IN THE WATER SYSTEM.

G-9 NEW WATER PIPING SHALL NOT BE ROUTED IN OUTSIDE WALLS OR ON EXTERIOR SIDE OF BUILDING INSULATION ENVELOPE EXCEPT FOR WALL HYDRANTS.

G-10 CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS FOR THOSE WORKING IN THE CRAWL SPACE UNDER THE BUILDING. LIGHTING IS A MINIMUM AND SHOULD BE SUPPLEMENTED. VENTILATION IS A MINIMUM AND SHOULD BE SUPPLEMENTED. THESE ITEMS ARE ONLY SUGGESTIONS FOR THE COMFORT AND SAFETY OF THE WORKERS. CONTRACTOR SHALL VISIT THE SITE AND PLAN ACCORDINGLY.

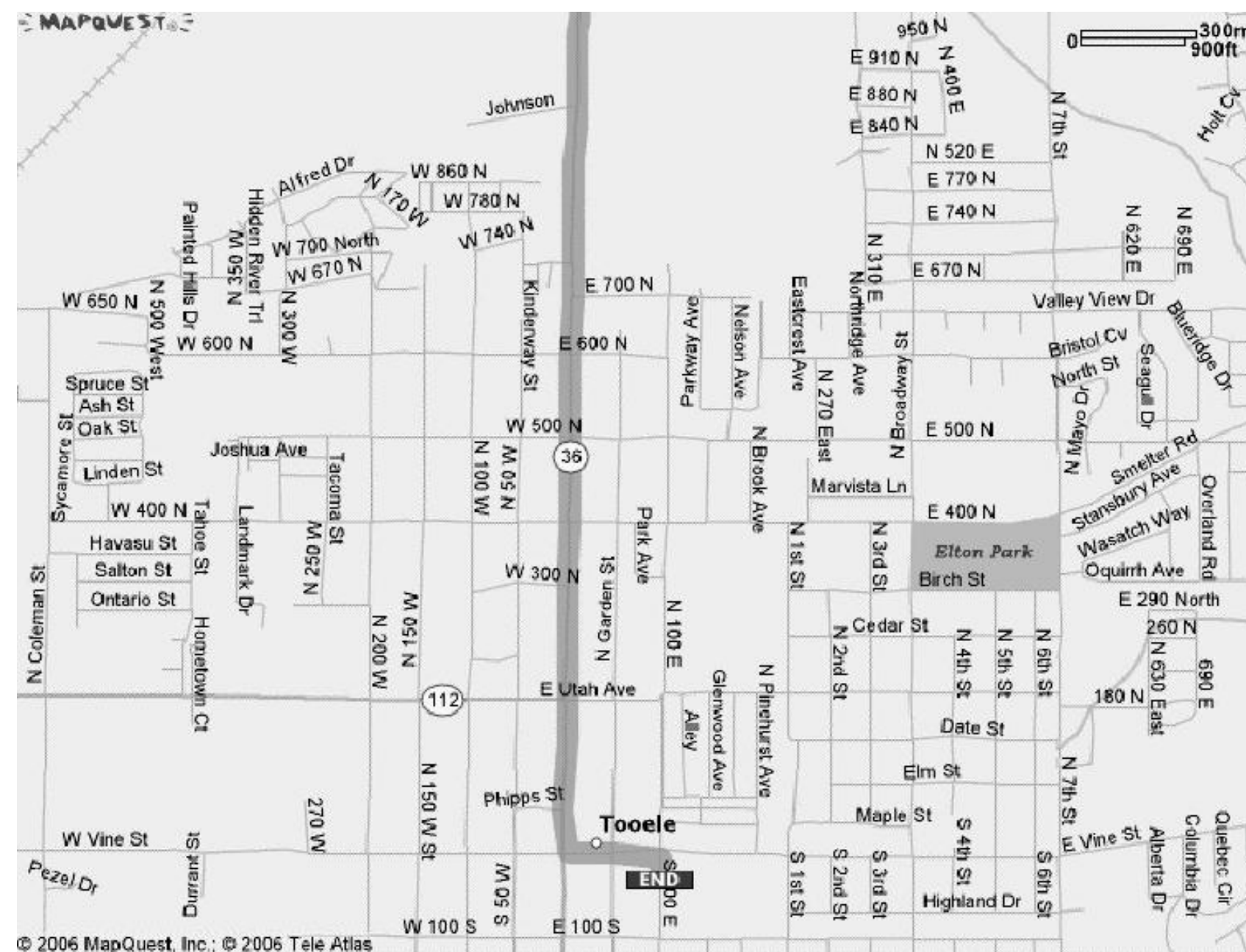
G-11 CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL EXISTING PIPING, CONDITIONS, TIE-INS ETC.

G-12 THE MAIN OBJECTIVES OF THIS PROJECT IS TO:
A. REMOVE ALL THE EXISTING HEATING HOT WATER SUPPLY AND RETURN PIPING, INSULATION, HANGERS, VALVES, FITTINGS, UNIONS ETC. AND REPLACE WITH NEW PIPING, INSULATION, HANGERS, VALVES, FITTINGS, UNIONS ETC.

- B. REMOVE ALL THE EXISTING DOMESTIC HOT AND COLD WATER PIPING, INSULATION, HANGERS, VALVES, FITTINGS, UNIONS ETC. AND REPLACE WITH NEW TYPE K COPPER PIPING UNDERGROUND, IN THE CRAWL SPACE AND TYPE L COPPER ABOVE THE FLOOR ALONG WITH INSULATION, HANGERS, VALVES, FITTINGS, UNIONS ETC.

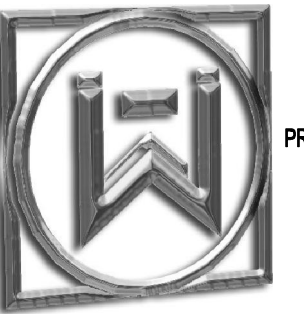
- C. DOMESTIC PIPING INSTALLED DURING THE 2004 TOILET ROOM RENOVATIONS SHALL REMAIN. EXISTING WATER PIPING SHALL BE INSULATED.

- D. NEW UNDERGROUND DOMESTIC WATER PIPING SHALL BE PROVIDED FROM THE EXISTING METER DISCHARGE CONNECTION TO THE EXISTING RISER BALL VALVE LOCATED IN THE BUILDING CRAWL SPACE. EXISTING WATER METER SHALL REMAIN.



TOOELE NATIONAL GUARD LOCATION MAP 100 EAST VINE STREET

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Tooele, Utah

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PROJECT MANAGER:
SLW

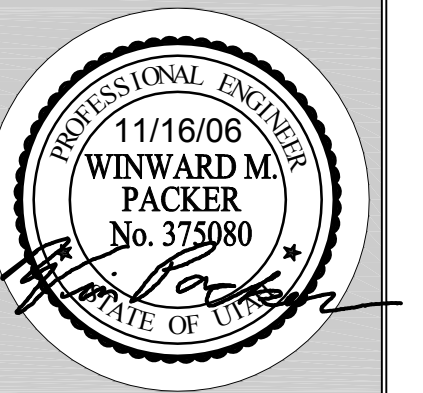
RAWN BY:
STAFF

CHECKED BY:
SLW

DATE:
11/16/06

HW JOB NO.:
06021

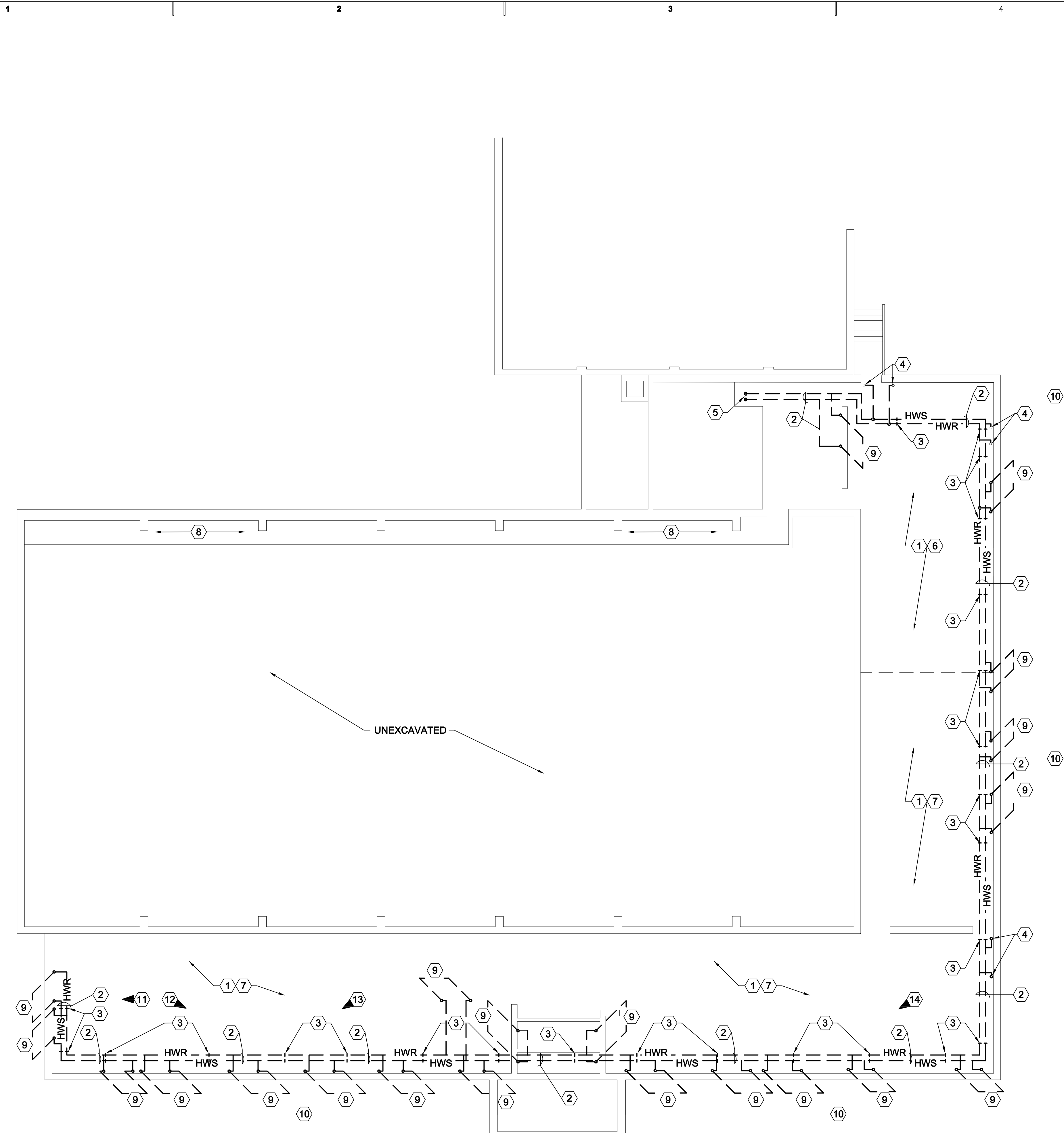
SHEET TITLE



GENERAL NOTES AND LEGEND

SHEET NO.

M001



CRAWL SPACE HEATING HOT WATER PIPING DEMOLITION PLAN

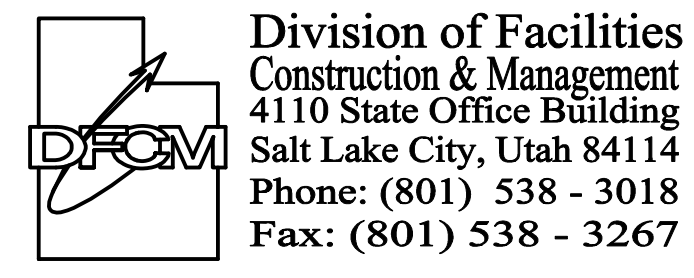
SCALE: 1/8" = 1'-0"

SHEET NOTES

- SHEET NOTES:**
- 1 WORK AREA.
 - 2 REMOVE EXISTING HEATING HOT WATER SUPPLY AND RETURN PIPING INSULATION, VALVES, FITTINGS.
 - 3 REMOVE EXISTING PIPE HANGERS, RODS, AND WALL CLIPS IN THE DOUBLE TEE JOISTS. TYPICAL 26 LOCATIONS. CONTRACTOR SHALL FIELD VERIFY EXACT NUMBER.
 - 4 PLUG EXISTING HOLES THROUGH FLOOR AND FINISH WITH CONCRETE PATCH. RISERS HAVE PREVIOUSLY BEEN REMOVED OR CUT OFF.
 - 5 REMOVE EXISTING 2-1/2" HWS AND HWR PIPING THRU-FLOOR TO BOILER ROOM. SEE MD401 FOR CONTINUATION.
 - 6 STANDING SPACE, DIRT FLOOR.
 - 7 CRAWL OR KNEEL SPACE, DIRT FLOOR. SEE PHOTOGRAPHS.
 - 8 CONCRETE TUNNEL- CRAWL SPACE, CONCRETE FLOOR.
 - 9 REMOVE ALL RISERS THRU FLOOR. TYPICAL AT ALL CONVECTOR LOCATIONS.
 - 10 SEE SHEET MD102 FOR CONTINUATION OF ALL PIPING.
 - 11 SEE DEMOLITION PHOTO A4/MD103 FOR PIPING THIS AREA.
 - 12 SEE DEMOLITION PHOTO A2/MD103 FOR PIPING THIS AREA.
 - 13 SEE DEMOLITION PHOTO A1/MD103 FOR PIPING THIS AREA.
 - 14 SEE DEMOLITION PHOTO B1/MD103 FOR PIPING THIS AREA.

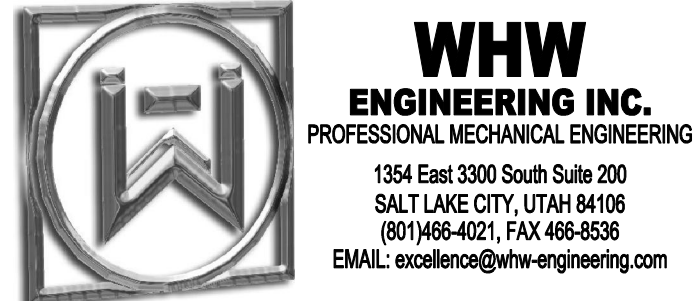
State of Utah

Department of Administrative Services



Internet: <http://www.dfc.state.ut.us>

CONSULTANTS



PROJECT NAME & ADDRESS

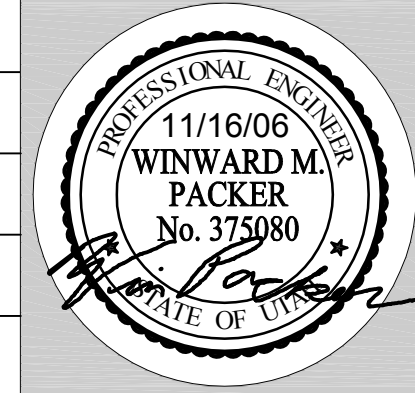
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DFCM No. 06271470

Tooele, Utah

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DRAWN BY:	STAFF
CHECKED BY:	SLW
DATE:	11/16/06
WHW JOB NO.:	06021
SHEET TITLE	



CRAWL SPACE HEATING
HOT WATER PIPING
DEMOLITION
PLAN

SHEET NO. **MD101**



REMOVE EXISTING AIR HANDLING UNIT AND DUCT WORK ALTERNATE #1.

AIR HANDLER SHALL REMAIN BASE BID.

REMOVE CONVECTORS AND HWS AND HWR PIPING VALVES ETC.

WATER SUPPLY TO EVAPORATIVE COOLERS SHALL REMAIN

C1 TYPICAL HOT WATER CONVECTOR DEMOLITION

SEAL WALL AND FLOOR OPENINGS. SEE SPECIFICATIONS



REMOVE GALVANIZED HOT AND COLD WATER PIPING. DO NOT REPLACE

B1 KITCHEN LOOKING NORTH



REMOVE EXISTING WATER SUPPLY TO EVAPORATIVE COOLERS INCLUDING SUPPORTS ETC.

REMOVE COMPRESSION TANKS, PIPING, AND SUPPORTS

REUSE EXISTING ELECTRICAL PANEL ETC.

UNIT HEATER DISCONNECT TO REMAIN IF IT CAN BE REUSED

REMOVE PUMP CONTROLS, STARTERS, AND DISCONNECTS

REMOVE 2-1/2" HWS & HWR TO THE CRAWL SPACE

A1 BOILER ROOM LOOKING NORTH-EAST



REMOVE 2-1/2" HWS & HWR ALONG WITH HOT WATER COIL

C2 ASSEMBLY HALL LOOKING NORTH

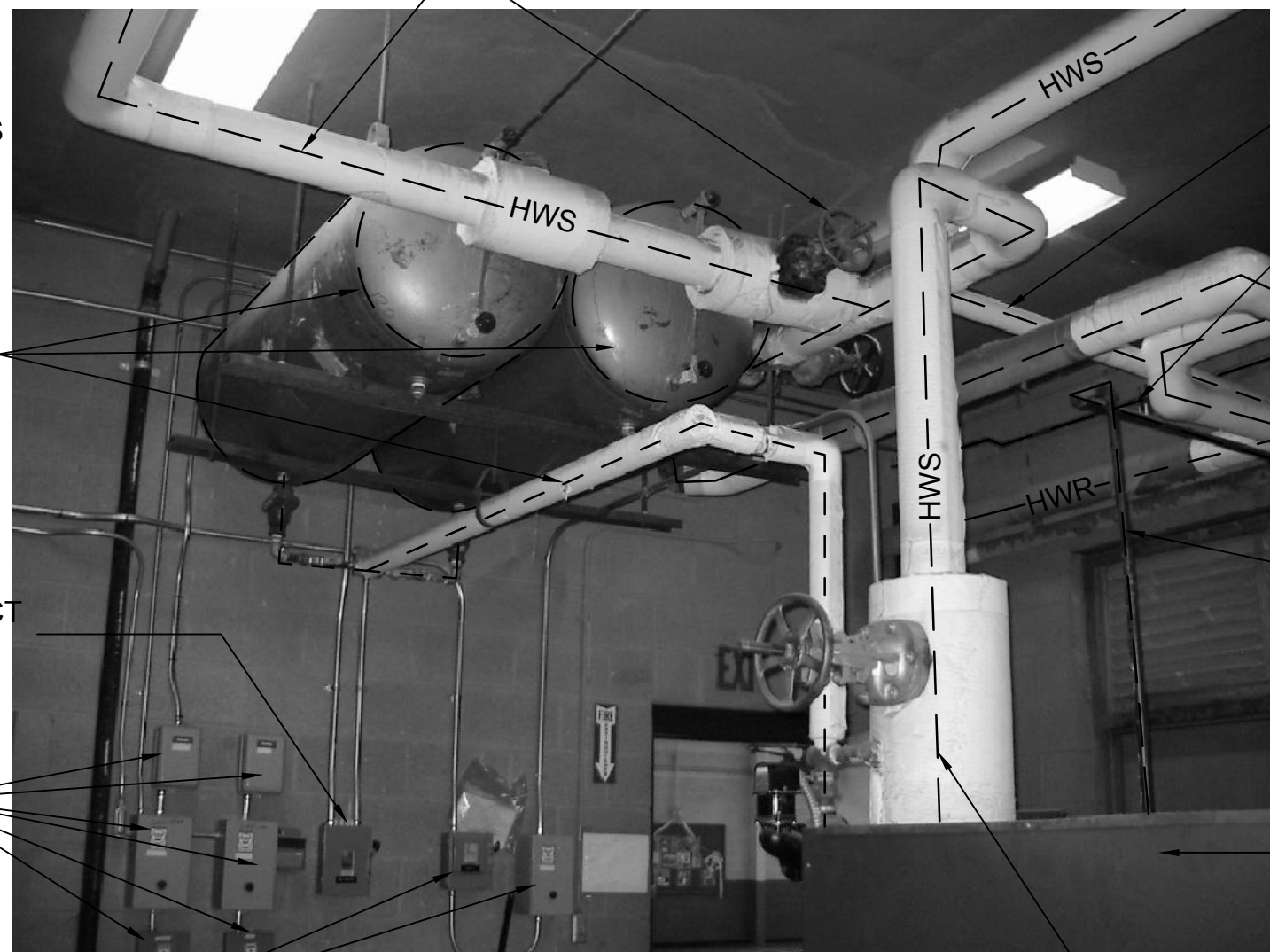
REMOVE EXISTING HWR FROM ASSEMBLY HALL



REMOVE EXISTING COLD WATER MAKE-UP

REMOVE EXISTING THERMOSTAT FOR UNIT HEATER AND REPLACE WITH NEW. REUSE CONDUIT AND WIRING.

B2 BOILER ROOM LOOKING SOUTH



REMOVE EXISTING HWS AND HWR PIPING, VALVES, HANGERS, ETC.

REMOVE EXISTING HWS TO CHEMICAL POT FEEDER

REMOVE EVAPORATIVE FEED COLD WATER PIPING TO POINT SHOWN ON SHEET MP101

REMOVE COMPRESSION TANKS, PIPING, AND SUPPORTS

REMOVE COMMON GAS VENT PIPING OR REUSE FOR NEW GAS TRAIN. CONTRACTORS OPTION

BOILER SHALL REMAIN

BOILER CONTROLS TO REMAIN

REMOVE HWS PIPING, VALVES, SUPPORTS ETC.

A2 BOILER ROOM LOOKING SOUTH-WEST



REMOVE EXISTING 2-1/2" HWS & HWR SERVING AIR HANDLING HEATING UNIT

C4 ASSEMBLY HALL LOOKING NORTH-WEST



REMOVE EXISTING MAKE-UP WATER HWR LINE

REMOVE HWR PIPING

REMOVE EXISTING CHEMICAL FEED LINE

EXISTING BOILER BREECHING SHALL REMAIN

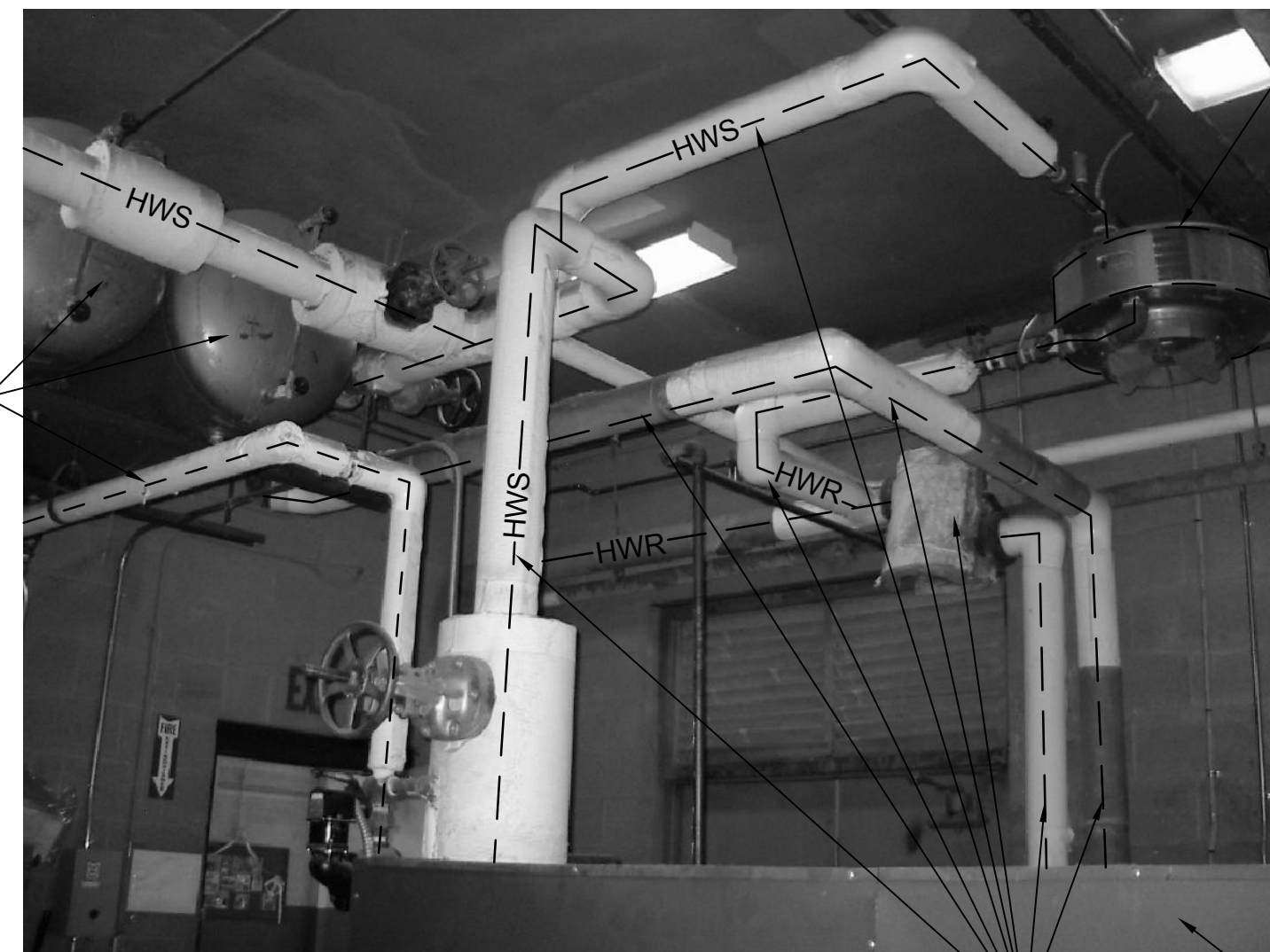
EXISTING BOILER SHALL REMAIN

REMOVE EXISTING CHEMICAL POT FEEDER AND PIPING

COMBUSTION AIR LOUVERS SHALL REMAIN

REMOVE HWR PIPING, PUMPS SUPPORTS, ELECTRICAL ETC.

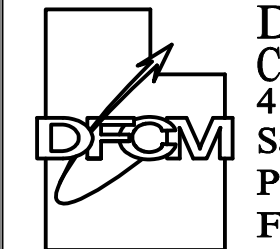
B4 BOILER ROOM LOOKING NORTH-WEST



REMOVE VERTICAL HW UNIT HEATER AND ALL HWS AND HWR PIPING, VALVES, CONTROLS, HANGERS ETC.

REMOVE ALL HWS AND HWR PIPING, VALVES, HANGERS, ETC.

A4 BOILER ROOM LOOKING SOUTH-WEST



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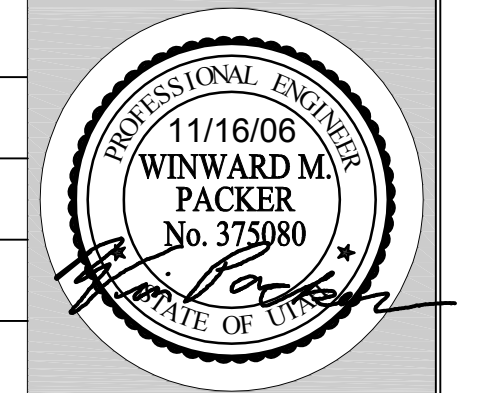
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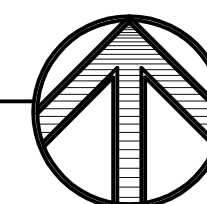
SHEET TITLE

MECHANICAL DEMOLITION
PHOTOGRAPHS OF
EXISTING SYSTEM

SHEET NO.
MD103



SCALE: 1/2" = 1'-0"



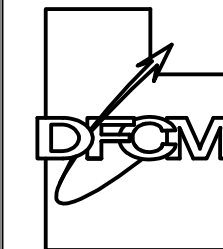
SHEET NOTES

SHEET NOTES:

- ① REMOVE ALL EXISTING HEATING HOT WATER SUPPLY COMPLETE WITH FITTINGS, VALVES, HANGERS, AND INSULATION.
- ② REMOVE ALL EXISTING HEATING HOT WATER RETURN COMPLETE WITH FITTINGS, VALVES, HANGERS, AND INSULATION.
- ③ REMOVE EXISTING 3-WAY VALVE, CONTROLS ETC.
- ④ REMOVE EXISTING HEATING HOT WATER IN -LINE PUMPS, SUPPORTS, ELECTRICAL AND CONTROLS.
- ⑤ REMOVE EXISTING DRAIN PIPING.
- ⑥ EXISTING HOT WATER CAST IRON BOILER SHALL REMAIN.
- ⑦ REMOVE EXISTING DISCHARGE PIPING FROM BOILER RELIEF VALVE.
- ⑧ REMOVE EXISTING COMPRESSION TANKS, PIPING, SUPPORTS ETC.
- ⑨ REMOVE EXISTING CHEMICAL FEED POT COMPLETE WITH PIPING, VALVES, SUPPORTS, INSULATION ETC.
- ⑩ REMOVE EXISTING AIR ELIMINATOR, PIPING, SUPPORTS ETC.
- ⑪ REMOVE EXISTING VERTICAL HOT WATER UNIT HEATER COMPLETE WITH PIPING, HANGERS, CONTROLS ETC.
- ⑫ REMOVE EXISTING COLD WATER MAKE UP PIPING INCLUDING BACKFLOW VALVE, PRV VALVE AND BLOCK VALVES.
- ⑬ REMOVE EXISTING GAS TRAIN AND REPLACE.
- ⑭ REMOVE EXISTING GALVANIZED WATER PIPING.
- ⑮ EXISTING COPPER PIPING SERVING THE EVAPORATIVE COOLERS SHALL BE REMOVED INCLUDING HOSE BIBB TO POINT SHOWN.
- ⑯ GAS PIPING SHALL REMAIN.
- ⑰ EXISTING OPENINGS THRU FLOOR SHALL REMAIN AND BE REUSED FOR NEW PIPING.
- ⑱ SEE SHEET MD101 FOR CONTINUATION.
- ⑲ EXISTING BREECHING SHALL REMAIN.
- ⑳ REMOVE ALL EXISTING PUMP STARTERS, DISCONNECTS, CONTROLS, BOXES, CONDUIT AND WIRING.
- ㉑ EXISTING BOILER CONTROLS ETC, SHALL REMAIN.
- ㉒ REUSE DISCONNECT FOR NEW UNIT HEATER.
- ㉓ EXISTING WATER PIPING FROM POINT OF REMOVAL TO EVAPORATIVE COOLERS SHALL REMAIN.

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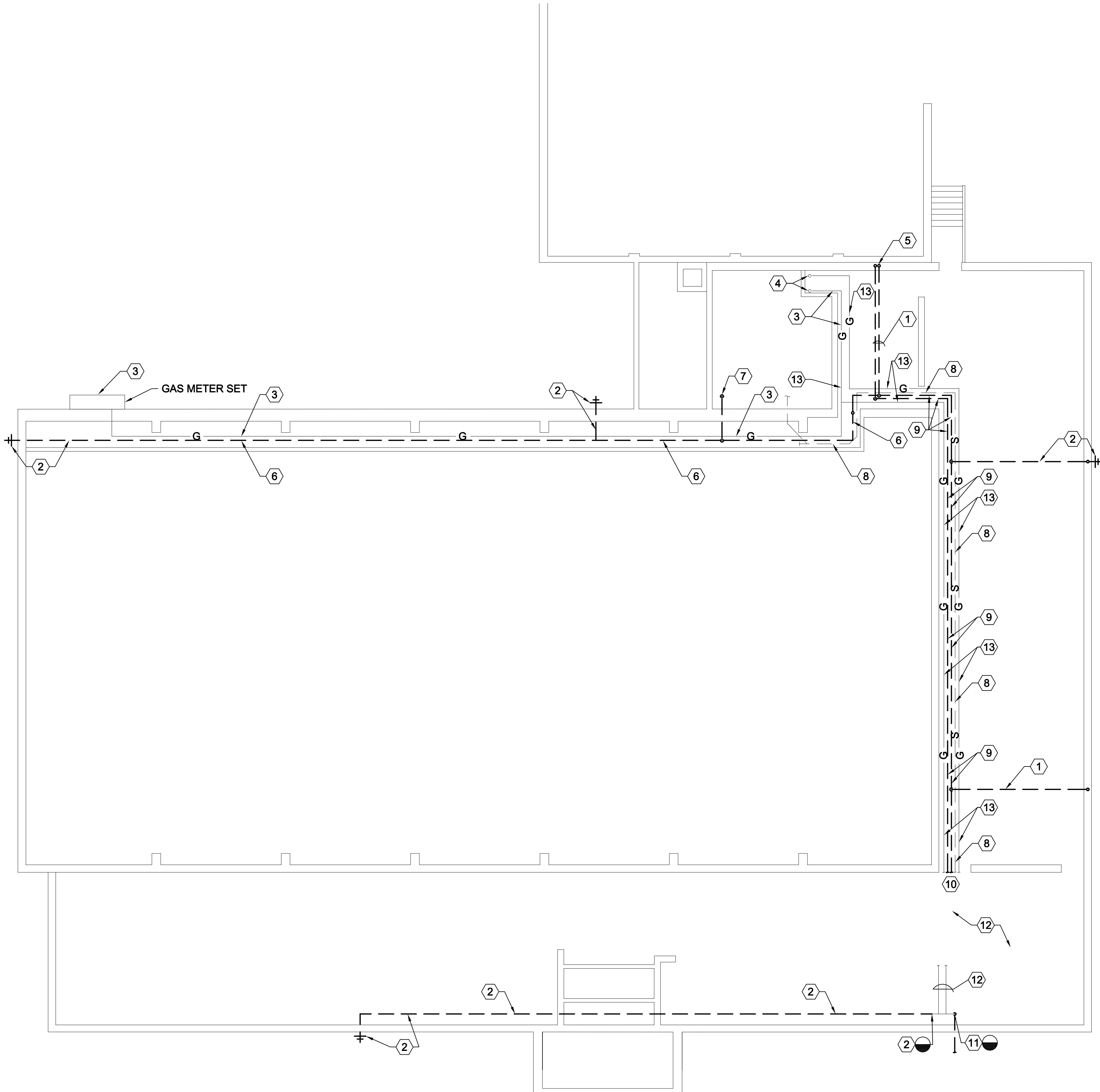
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1	SHEET TITLE
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BOILER ROOM LARGE SCALE DEMOLITION PLAN

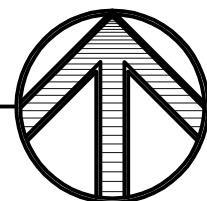
SHEET NO.

MD401



CRAWL SPACE PLUMBING PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



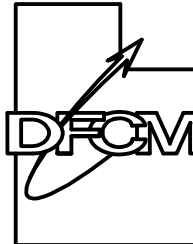
SHEET NOTES

SHEET NOTES:

- ① REMOVE EXISTING DOMESTIC WATER PIPING AND DO NOT REPLACE.
- ② REMOVE EXISTING DOMESTIC COLD WATER SUPPLY PIPING TO WALL HYDRANT. REMOVE EXISTING WALL HYDRANT.
- ③ EXISTING GAS PIPING FROM GAS METER SHALL REMAIN. GAS METER SHALL REMAIN.
- ④ EXISTING GAS PIPING THRU-FLOOR SHALL REMAIN, SEE SHEET MD401 FOR CONTINUATION.
- ⑤ REMOVE EXISTING 1/2" HOT AND COLD WATER PIPING, FITTINGS, INSULATION, HANGERS, ETC. UP TO KITCHEN SINK DO NOT REPLACE PIPING.
- ⑥ REMOVE EXISTING DOMESTIC COLD WATER PIPING IN TUNNEL INCLUDING FITTINGS, VALVES, INSULATION, HANGERS, RODS, ETC.
- ⑦ REMOVE WATER MAKE-UP PIPING TO BOILER ROOM. SEE SHEET MD401 FOR CONTINUATION.
- ⑧ EXISTING 2" SEWER PIPING SHALL REMAIN.
- ⑨ REMOVE EXISTING DOMESTIC HOT AND COLD WATER PIPING, FITTINGS, VALVES, INSULATION, HANGERS, RODS ETC. FIELD VERIFY EXACT LOCATIONS. HOT WATER PIPING SHALL NOT BE REPLACED.
- ⑩ REMOVE EXISTING DOMESTIC HOT AND COLD WATER, FITTINGS, INSULATION, HANGERS ETC. FROM THIS POINT TO WHERE PIPING CONNECTED INTO THE 2004 TOILET ROOM RENOVATIONS. DO NOT REMOVE THE PIPING INSTALL IN THE 2004 RENOVATIONS.
- ⑪ REMOVE 2" WATER SERVICE TO BUILDING FROM 2" BALL VALVE TO EXTERIOR METER DISCHARGE CONNECTION.
- ⑫ NEW PIPING INSTALLED DURING THE 2004 RENOVATION SHALL REMAIN. FIELD VERIFY EXACT LOCATIONS.
- ⑬ EXISTING GAS PIPING SHALL REMAIN.

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DRAWN BY:

STAFF

CHECKED BY:

SLW

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11/16/06

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SHEET TITLE

CRAWL SPACE PLUMBING
PIPING DEMOLITION PLAN

SHEET NO.

PD101

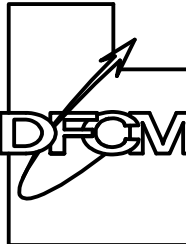


SHEET NOTES

SHEET NOTES:

- 1 PROVIDE ALL NEW HEATING HOT WATER SUPPLY AND RETURN PIPING IN CRAWL SPACE. PROVIDE ALL NEW FITTINGS, VALVES, AND INSULATION. USE SCHEDULE 40 CARBON STEEL PIPING.
- 2 PROVIDE EXPANSION TAKE OFFS ON ALL TAKE-OFFS TO HOT WATER CONVECTOR UNITS. SEE DETAIL B4/MP501. USE EXISTING HOLES IN FLOOR FOR RISERS.
- 3 PROVIDE NEW TYPE K COPPER DOMESTIC COLD WATER PIPING IN CRAWL SPACE. PROVIDE ALL NEW FITTINGS, VALVES AND INSULATION.
- 4 PROVIDE ALL NEW HANGERS, RODS, AND CONCRETE CONNECTORS FOR NEW MECHANICAL AND PLUMBING PIPING, SEE DETAIL A4/MP502.
- 5 SEE SHEET MP102 FOR CONTINUATION OF ALL RISERS.
- 6 PROVIDE NEW WALL HYDRANTS. FIELD VERIFY EXISTING LOCATIONS AND EXISTING WALL OPENINGS. PROVIDE NEW WALL OPENINGS OR USE EXISTING OPENINGS. SEAL AIR AND WATER TIGHT. FOUR HYDRANTS.
- 7 PROVIDE NEW 3/4" DOMESTIC COLD WATER IN EXISTING CONCRETE TUNNEL. PROVIDE NEW TYPE K COPPER PIPING, FITTINGS, VALVES, HANGERS AND INSULATION.
- 8 PROVIDE NEW 1" COLD WATER LINE RISER FOR HEATING HOT WATER MAKE-UP LINE AND EVAPORATIVE COOLERS. RISE UP COPPER IN EXISTING FLOOR OPENING. USE TYPE K COPPER IN CRAWL SPACE AND THRU FLOOR AND TYPE L ABOVE FLOOR. SEE SHEET MP401 FOR CONTINUATION.
- 9 SEE SHEET MP401 FOR CONTINUATION OF PIPING.
- 10 ALL HWS AND HWR RISERS SHALL BE 3/4".
- 11 FOLLOW NEW WATER PIPING BACK TO CONNECTION INTO 2004 COPPER PIPING IN CRAWL SPACE.
- 12 NEW 2" WATER SERVICE TO BUILDING. ROUTE IN SAME LOCATION AS EXISTING REMOVED WATER SERVICE. NEW WATER SERVICE SHALL EXTEND FROM CRAWL SPACE BALL VALVE TO EXISTING METER OUTLET CONNECTION. FIELD VERIFY ROUTING AND METER LOCATION.
- 13 ALL OTHER WATER PIPING EXCEPT THE PIPING INSTALLED DURING THE 2004 TOILET ROOM RENOVATIONS SHALL BE NEW.
- 14 EXISTING GAS PIPING THROUGHOUT THE BUILDING SHALL REMAIN.
- 15 EXISTING SEWER LINE SHALL REMAIN.

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DFCM No. 06271470

Tooele, Utah

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SHEET TITLE

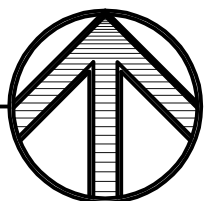
NEW CRAWL SPACE
MECHANICAL AND
PLUMBING PLAN

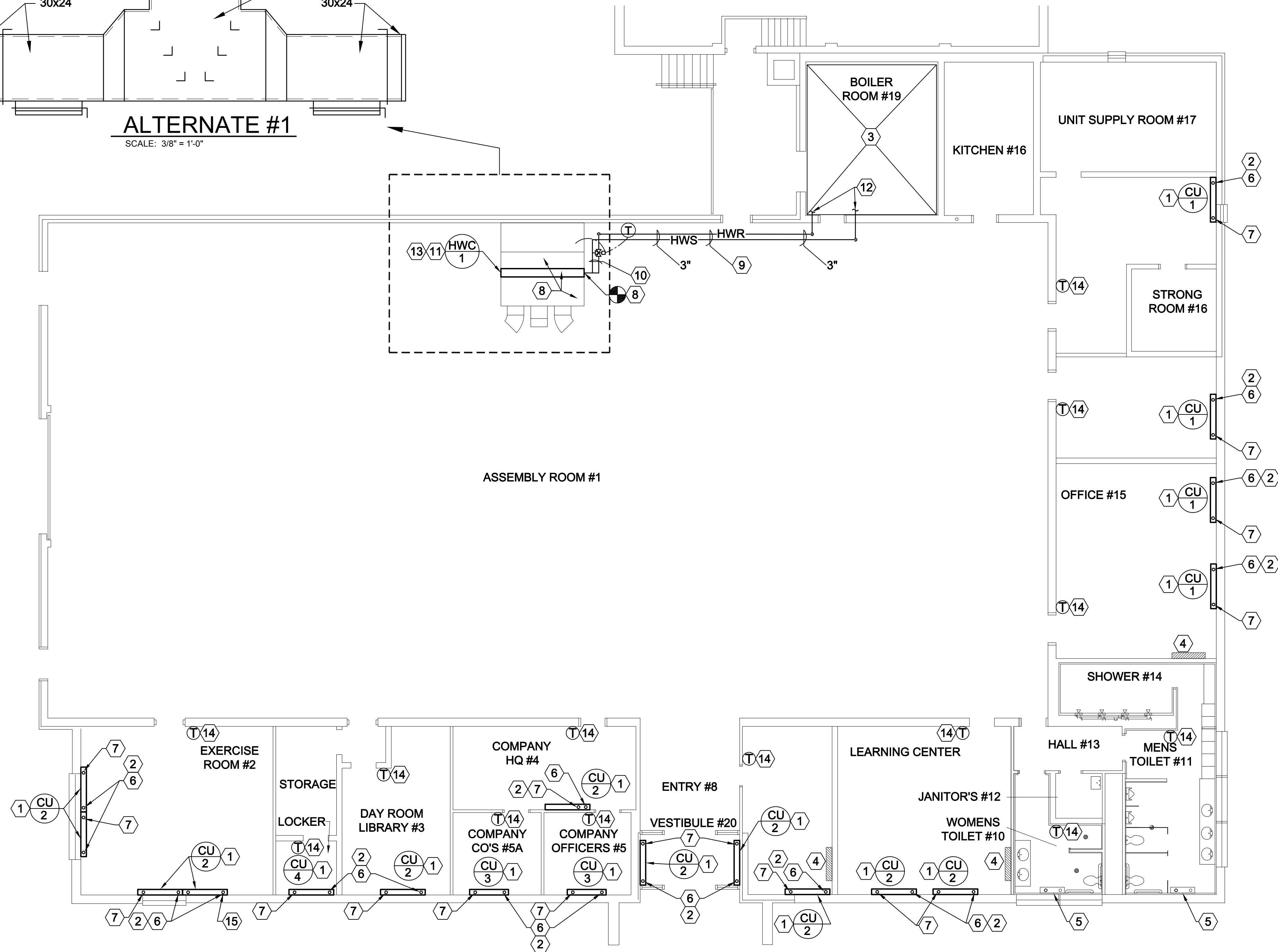
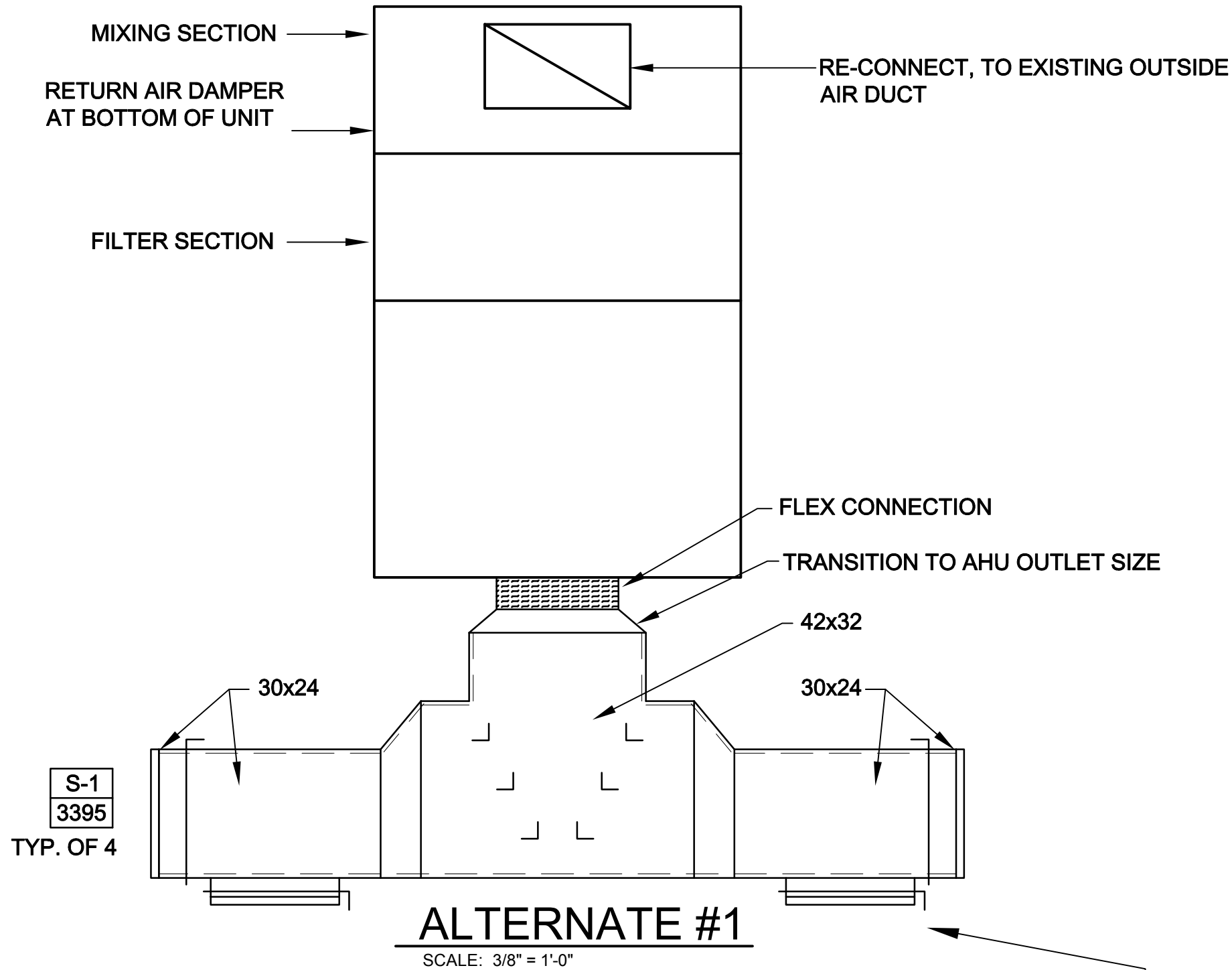
SHEET NO.

MP101

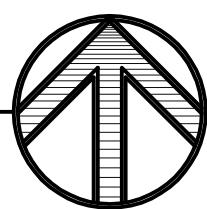
NEW CRAWL SPACE MECHANICAL AND PLUMBING PIPING PLAN

SCALE: 1/8" = 1'-0"





MAIN FLOOR MECHANICAL AND PLUMBING PLAN
SCALE: 1/8" = 1'-0"

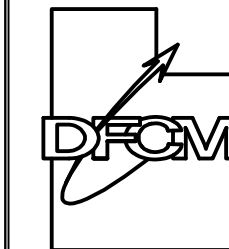


SHEET NOTES

- ① NEW HOT WATER CONVECTORS. SEE SCHEDULE AND DETAIL C3/MP501.
- ② SEE SHEET MP101 FOR SOURCE.
- ③ SEE LARGE SCALE PLAN OF THIS AREA. SHEET MP401.
- ④ EXISTING MITSUBISHI COOLING UNITS SHALL REMAIN.
- ⑤ EXISTING HOT WATER CONVECTORS IN TOILET ROOMS SHALL REMAIN. ADD NEW CONTROL VALVE.
- ⑥ HOT WATER SUPPLY SHALL CONSIST OF A 90° ELL, BALL VALVE, TWO WAY CONTROL VALVE AND UNION. SEE DETAIL C3/MP501.
- ⑦ HOT WATER RETURN SHALL CONSIST OF A 90° ELL, BALL VALVE, TWO WAY CONTROL VALVE AND UNION. SEE DETAIL C3/MP501.
- ⑧ BASE BID: EXISTING HEATING AND VENTILATION UNIT SHALL REMAIN. REPLACE EXISTING HEATING COIL WITH NEW HOT WATER COIL. SEE SCHEDULE SHEET MP601.
- ⑨ NEW 3" HOT WATER SUPPLY AND RETURN PIPING TO HEATING AND VENTILATION UNIT HOT WATER COIL. ROUTE OVERHEAD IN SAME ELEVATION AS REMOVED PIPING.
- ⑩ SEE HOT WATER COIL PIPING DETAIL A2/MP502
- ⑪ BASE BID: PROVIDE NEW HOT WATER COIL IN EXISTING AIR HANDLING UNIT. NEW HOT WATER COIL. SEE SCHEDULE SHEET MP601.
- ⑫ USE SAME OPENINGS AS EXISTING HOT WATER SUPPLY AND RETURN PIPING. ENLARGE OPENINGS IF NOT LARGE ENOUGH FOR NEW 3" PIPING AND INSULATION.
- ⑬ PROVIDE NEW SUSPENDED AIR HANDLING UNIT, DUCK WORK, COILS ETC. PROVIDE MOUNTING RODS, CLAMPS AND ISOLATION. MOUNT IN SAME LOCATION AS EXISTING REMOVED UNIT. DELETE NOTES 8 AND 11.
- ⑭ PROVIDE NEW ROOM SENSOR/THERMOSTAT FOR EACH NEW CONTROL VALVE. THERMOSTATS SHALL BE CONTROLLED BY A COMMON STAND-ALONE CONTROLLER. CONTROLLER SHALL BE CAPABLE OF BEING TIED INTO A FUTURE BUILDING AUTOMATION SYSTEM. SEE CONTROLS SPEC. FIELD VERIFY EXACT LOCATION OF NEW THERMOSTAT. COORDINATE WITH OWNER.
- ⑮ PROVIDE 3-WAY CONTROL VALVE AT THIS UNIT.

ALTERNATE #1

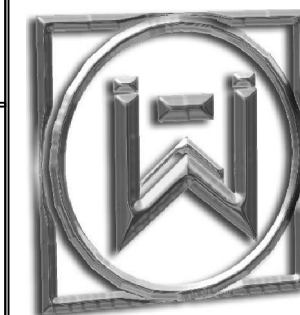
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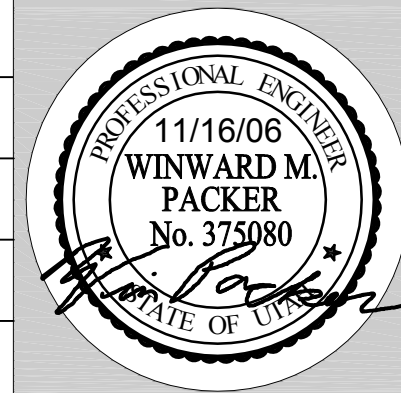
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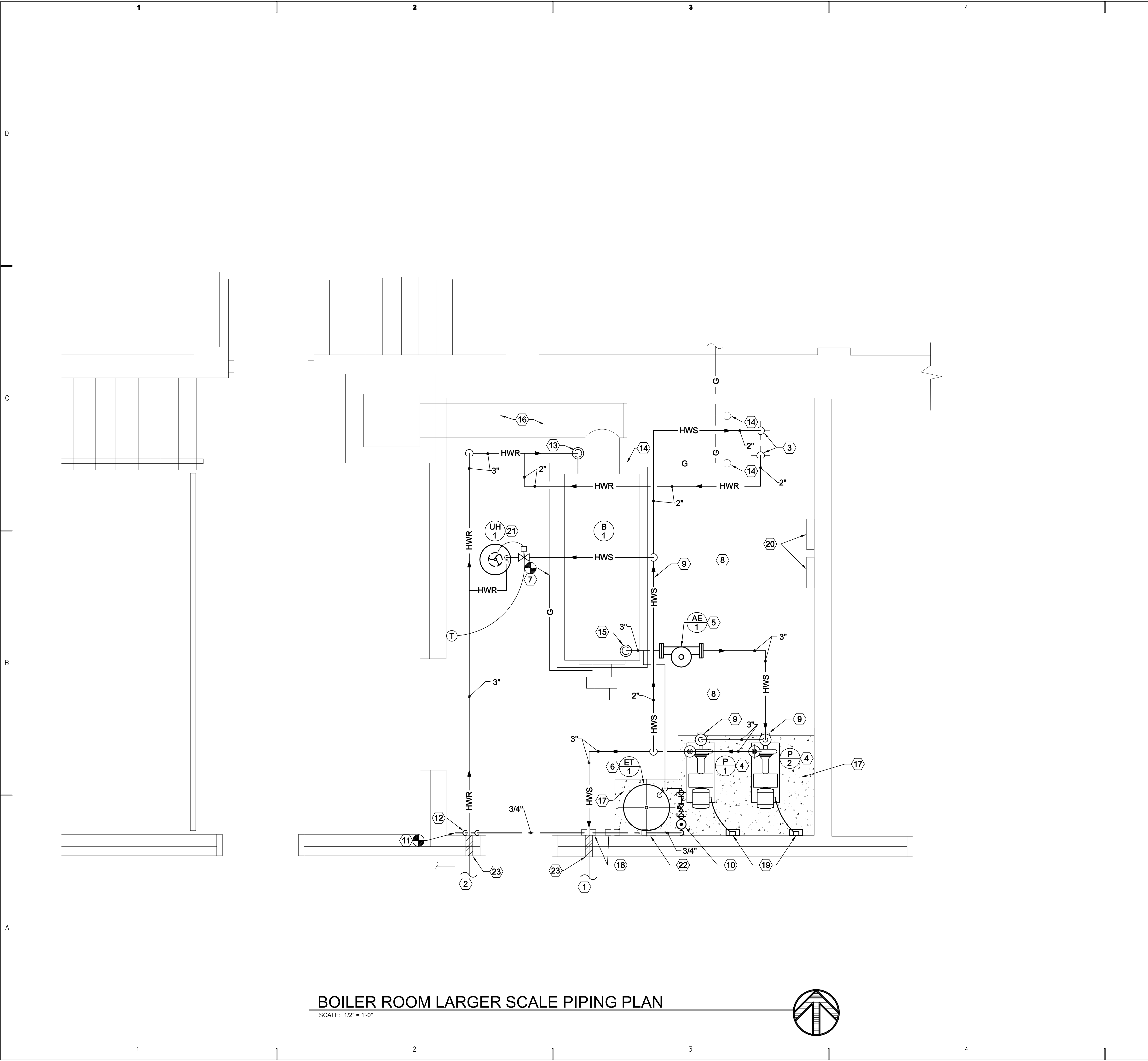
SHEET TITLE

**MAIN FLOOR MECHANICAL
AND PLUMBING PLAN**

SHEET NO.

MP102



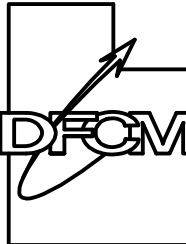


BOILER ROOM LARGER SCALE PIPING PLAN
SCALE: 1/2" = 1'-0"

SHEET NOTES

- SHEET NOTES:
- NEW 3" HOT WATER SUPPLY TO HEATING ONLY AIR HANDLING UNIT IN ASSEMBLY HALL. SEE SHEET MP101 FOR CONTINUATION.
 - NEW 3" HOT WATER RETURN TO HEATING ONLY AIR HANDLING UNIT IN ASSEMBLY HALL. SEE SHEET MP101 FOR CONTINUATION.
 - NEW 2" HWS AND HWR THRU FLOOR TO CRAWL SPACE TO SERVICE NEW CONVECTOR UNITS. SEE SHEET MP101 FOR CONTINUATION.
 - NEW MAIN HEATING HOT WATER PUMPS. SEE SCHEDULE MP601 FOR CAPACITY AND FLOW SHEET MP701.
 - NEW AIR ELIMINATOR TANK. SEE SCHEDULE MP601 AND DETAIL A4/MP501.
 - NEW EXPANSION TANK, FLOOR MOUNTED. SEE SCHEDULE MP601 AND DETAIL SHEET B1/MP501.
 - NEW CSDI GAS TRAIN. SEE DETAIL B1/MP502.
 - SEE HOT WATER FLOW SHEET MP701 FOR NEW HOT WATER DETAILS, ETC.
 - 3" INLET AND 1-1/2" PUMP CONNECTION SUCTION DIFFUSERS.
 - 1" COLD WATER MAKE-UP TO SYSTEM. SEE DETAIL C4/MP502.
 - NEW COPPER TYPE L WATER SUPPLY CONNECTION TO EXISTING EVAPORATIVE COOLERS. CONNECT TO EXISTING COPPER PIPE.
 - NEW 1" TYPE L COPPER PIPING THRU FLOOR TO SERVE MAKE-UP AND EXISTING EVAPORATIVE COOLERS.
 - PROVIDE 3" BUTTERFLY VALVE IN VERTICAL HWR PIPING CONNECTION TO BOILER.
 - GAS PIPING FROM CRAWL SPACE TO REMAIN.
 - PROVIDE NEW 3" BUTTERFLY VALVE ON BOILER OUTLET.
 - BREECHING SHALL REMAIN.
 - NEW 4" CONCRETE PAD. DOWELL INTO EXISTING CONCRETE FLOOR. SEE DETAIL A1/MP501.
 - EXISTING BOILER CONTROLS SHALL REMAIN.
 - NEW PUMP STARTERS AND DISCONNECTS. THIS CONTRACTOR SHALL CONTRACT WITH A DESIGN BUILD ELECTRICAL CONTRACTOR FOR THE ELECTRICAL PORTION OF THIS PROJECT. ELECTRICAL DESIGN BUILD CONTRACTOR SHALL VISIT THE SITE TO OBSERVE THE EXISTING ELECTRICAL SYSTEM AND THE REQUIREMENTS FOR THE NEW SYSTEM.
 - EXISTING ELECTRICAL SERVICE AND PANELS SHALL REMAIN.
 - PROVIDE NEW VERTICAL UNIT HEATER. SEE DETAIL C4/MP501.
 - REUSE DISCONNECT FOR NEW VERTICAL UNIT HEATER. RELOCATE TO MISS EXPANSION TANK.
 - RE-USE EXISTING OPENINGS IN WALL. MODIFY OPENINGS IF NOT LARGE ENOUGH FOR THE NEW 3" PIPING AND INSULATION. PROVIDE ESCUTCHEN PLATES.
 - NEW ELECTRIC ON/OFF HEATING ONLY THERMOSTAT. LOCATE IN SAME LOCATION AS EXISTING. USE EXISTING CONDUIT AND RUN NEW WIRING.

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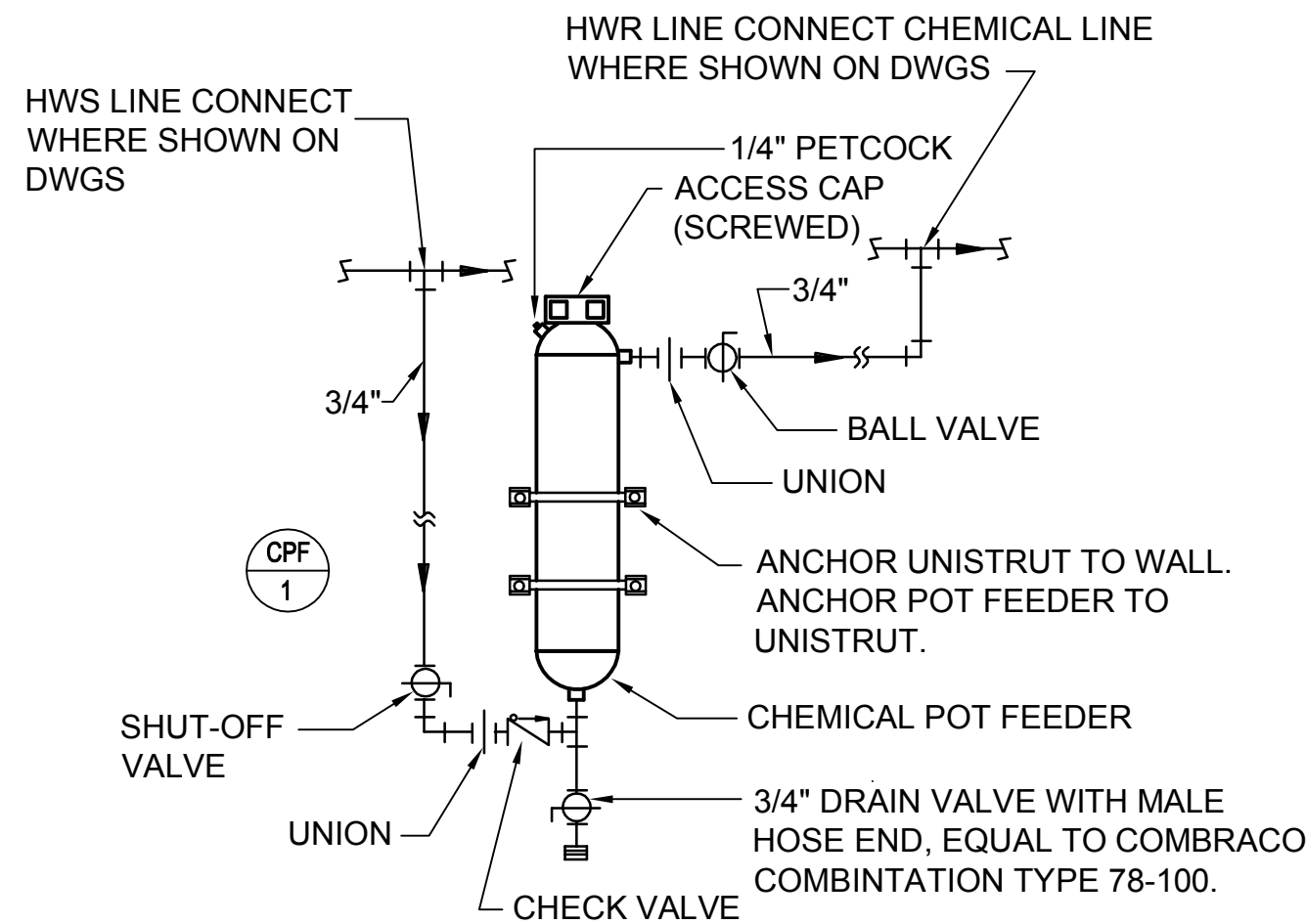
SHEET TITLE

BOILER ROOM LARGE
SCALE PIPING PLAN

SHEET NO.

MP401

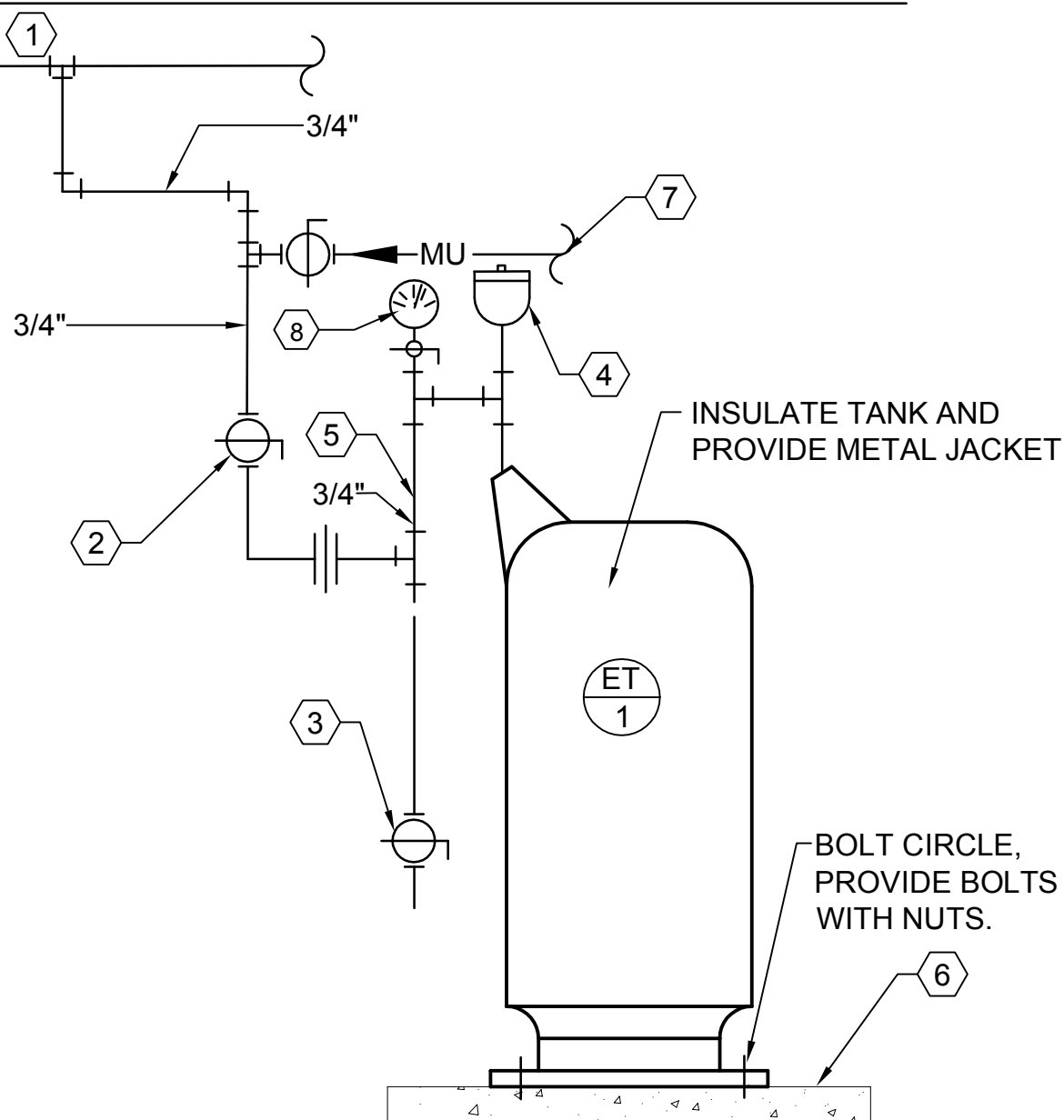




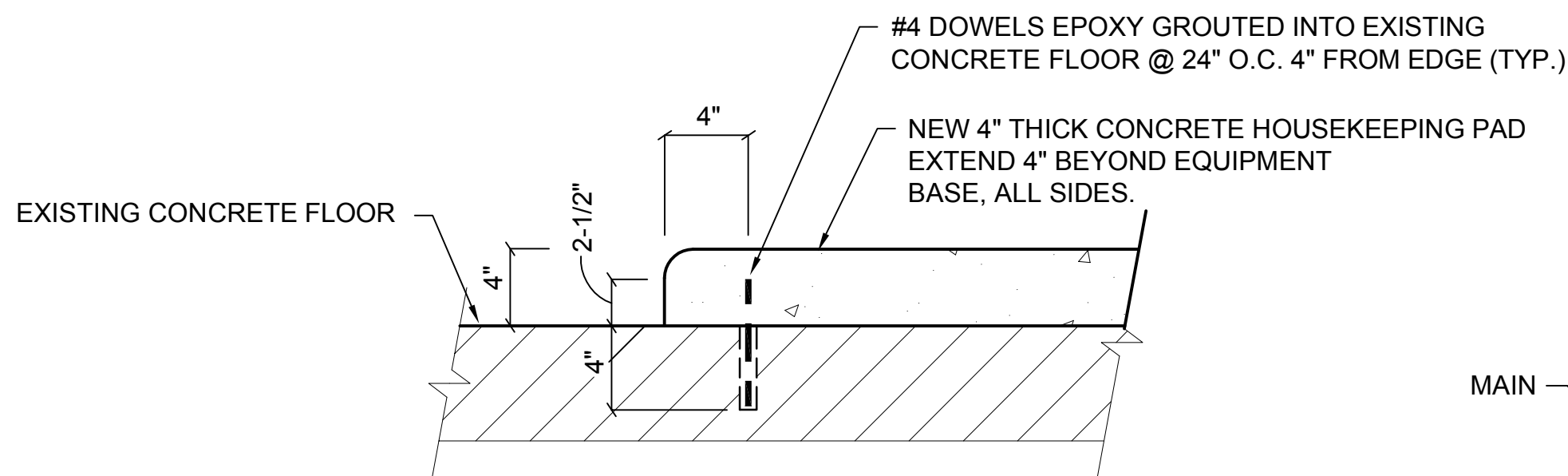
C1 CHEMICAL POT FEEDER AND PIPING DETAIL
SCALE: NONE

DETAIL NOTES:

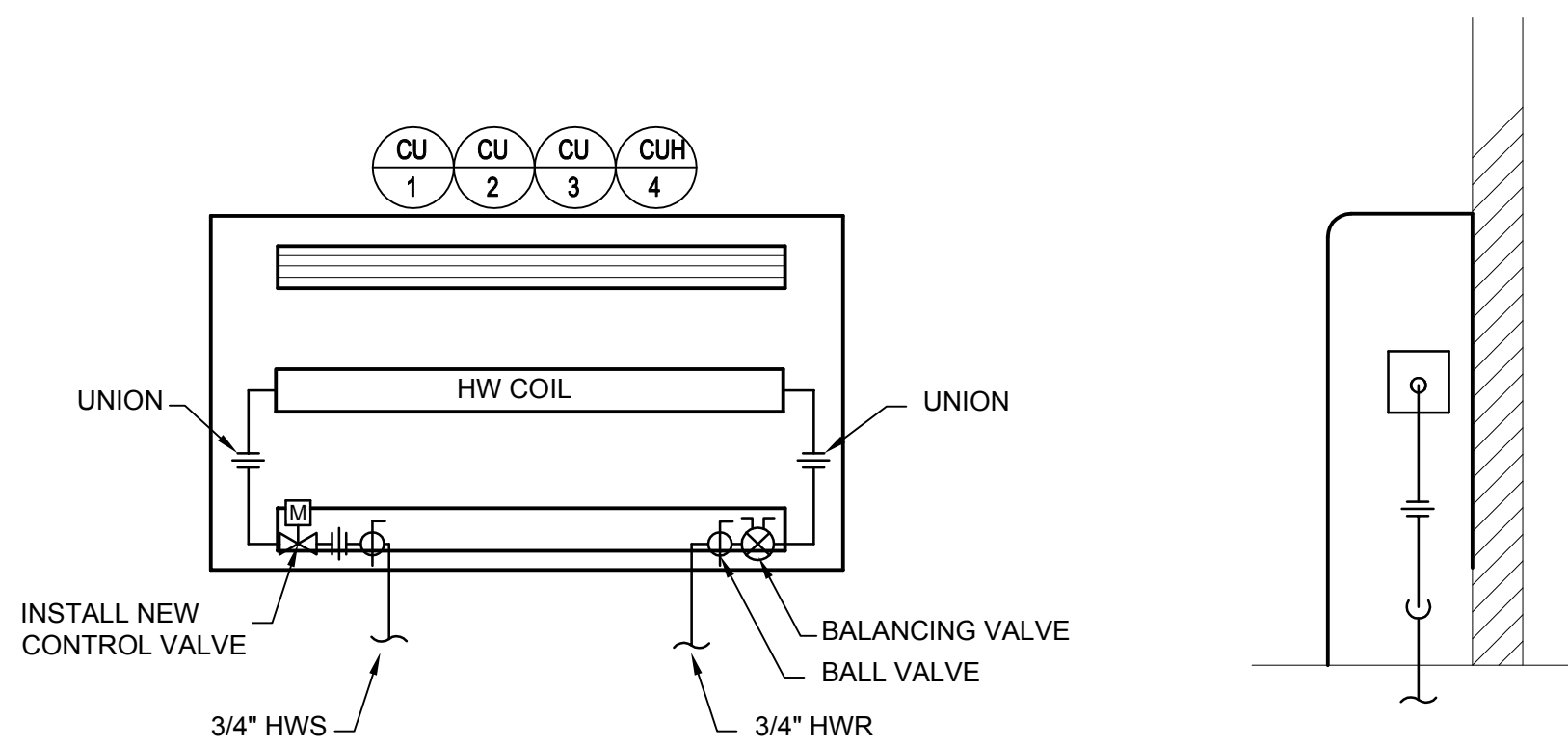
- 1 CONNECT TO SIDE OF HOT WATER SUPPLY MAIN. AVOID TOP OR BOTTOM CONNECTION TO PREVENT AIR OR DEBRIS FROM ENTERING PIPE TO TANK.
- 2 SHUT OFF BALL VALVE. REQUIRED TO PROPERLY PRECHARGE TANK.
- 3 DRAIN VALVE.
- 4 AUTOMATIC AIR VENT. BELL & GOSSETT MODEL #7 OR #87.
- 5 ANTI-THERMO-SYPHON LOOP. 12" MINIMUM DROP.
- 6 NEW HOUSEKEEPING PAD SEE DETAIL A1 THIS SHEET.
- 7 NEW 3/4" MAKE-UP WATER LINE. SEE DETAIL C4/MP502.
- 8 PRESSURE GAUGE -O- 60 PSIG WITH GAUGE COCK.



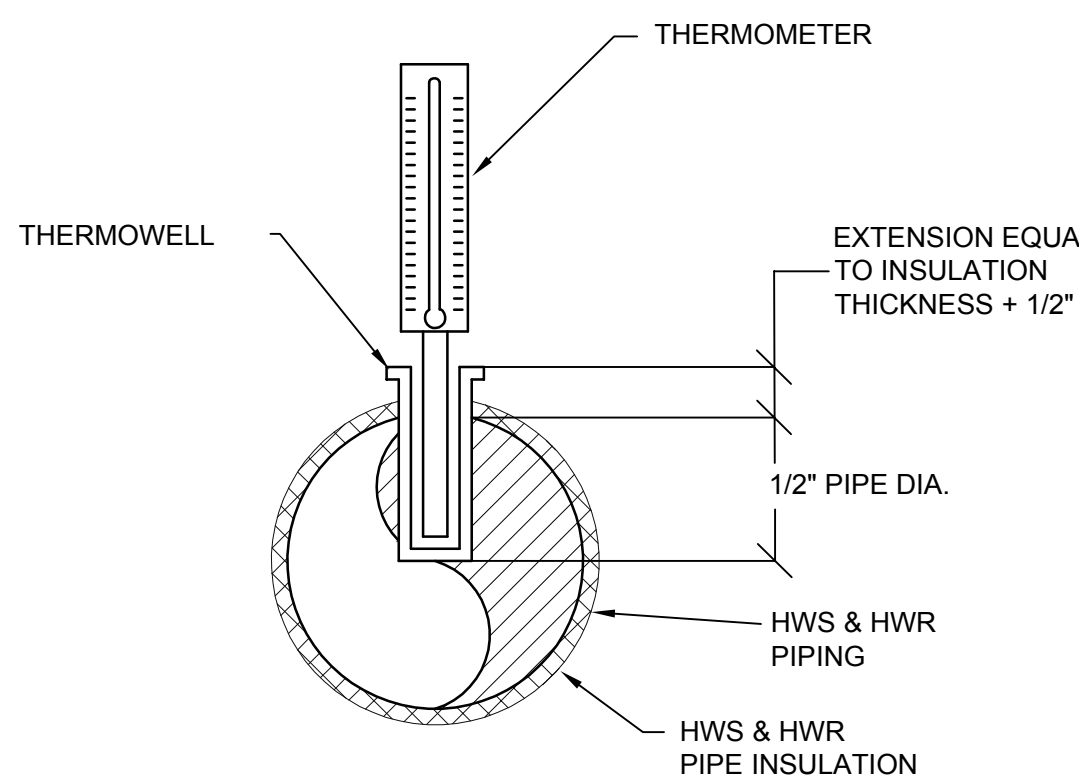
B1 EXPANSION TANK DETAIL
SCALE: NONE



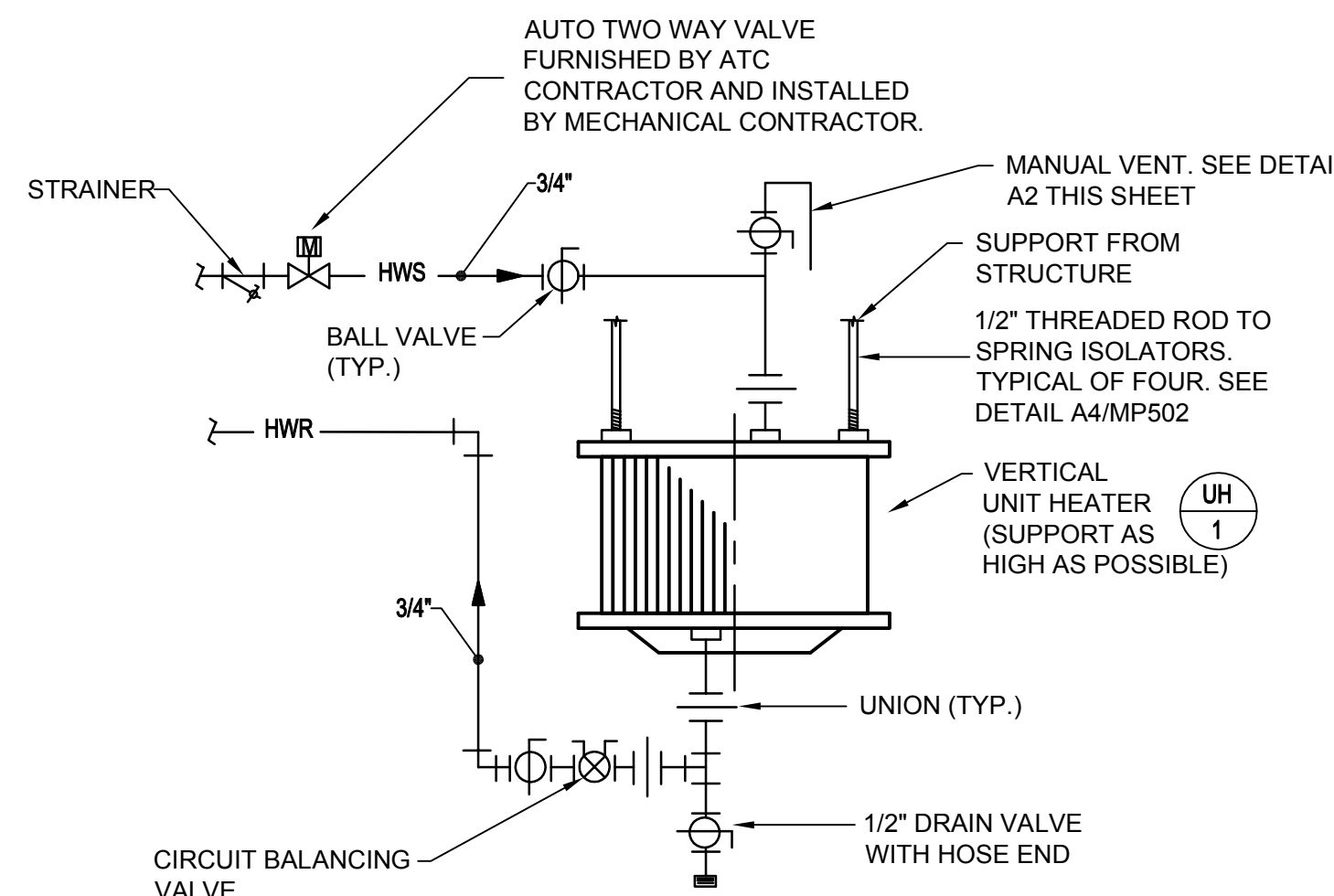
A1 PUMPS AND EXPANSION TANK HOUSEKEEPING PAD
SCALE: NONE



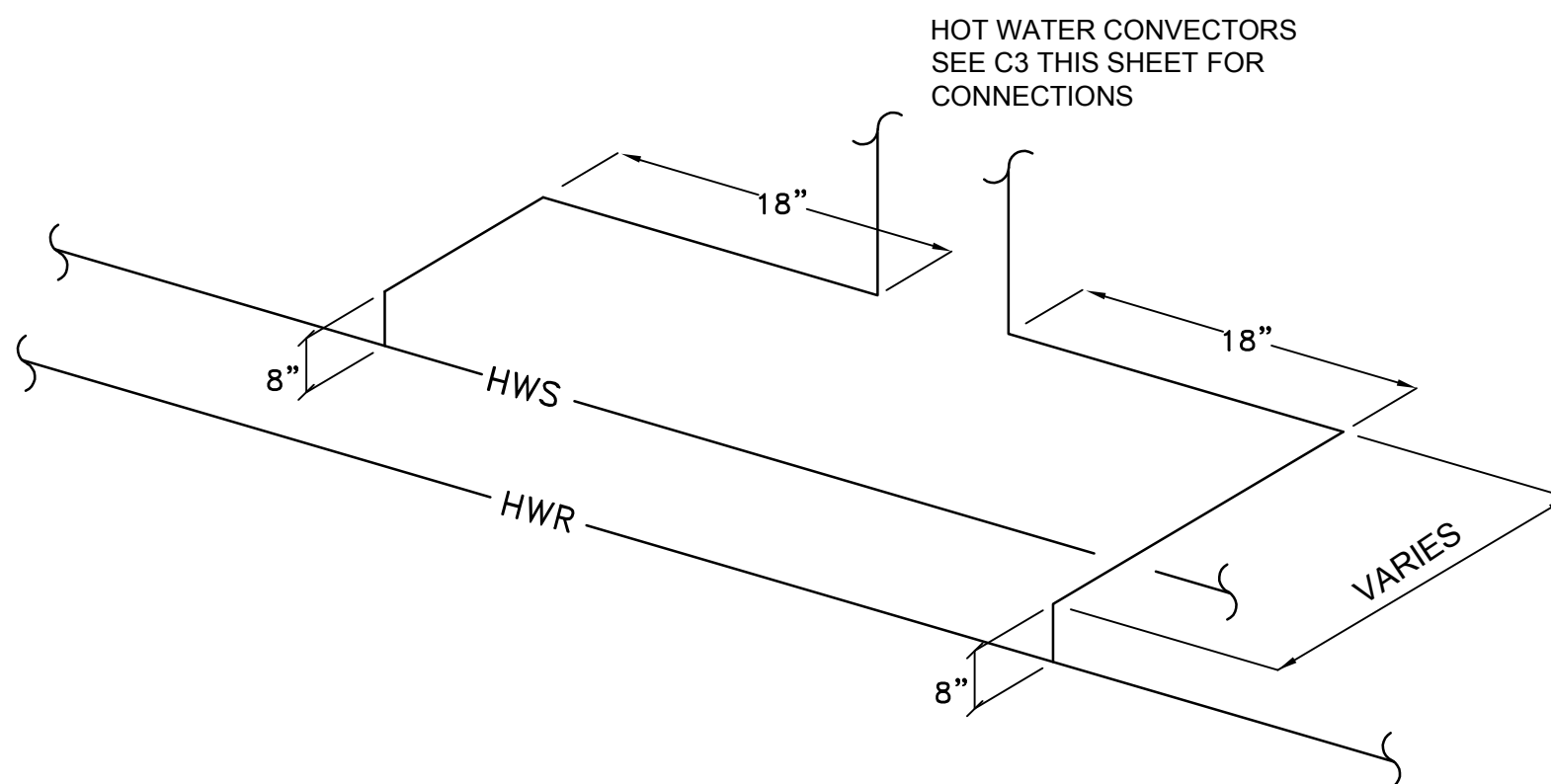
C3 HOT WATER CONVECTOR DETAIL
SCALE: NONE



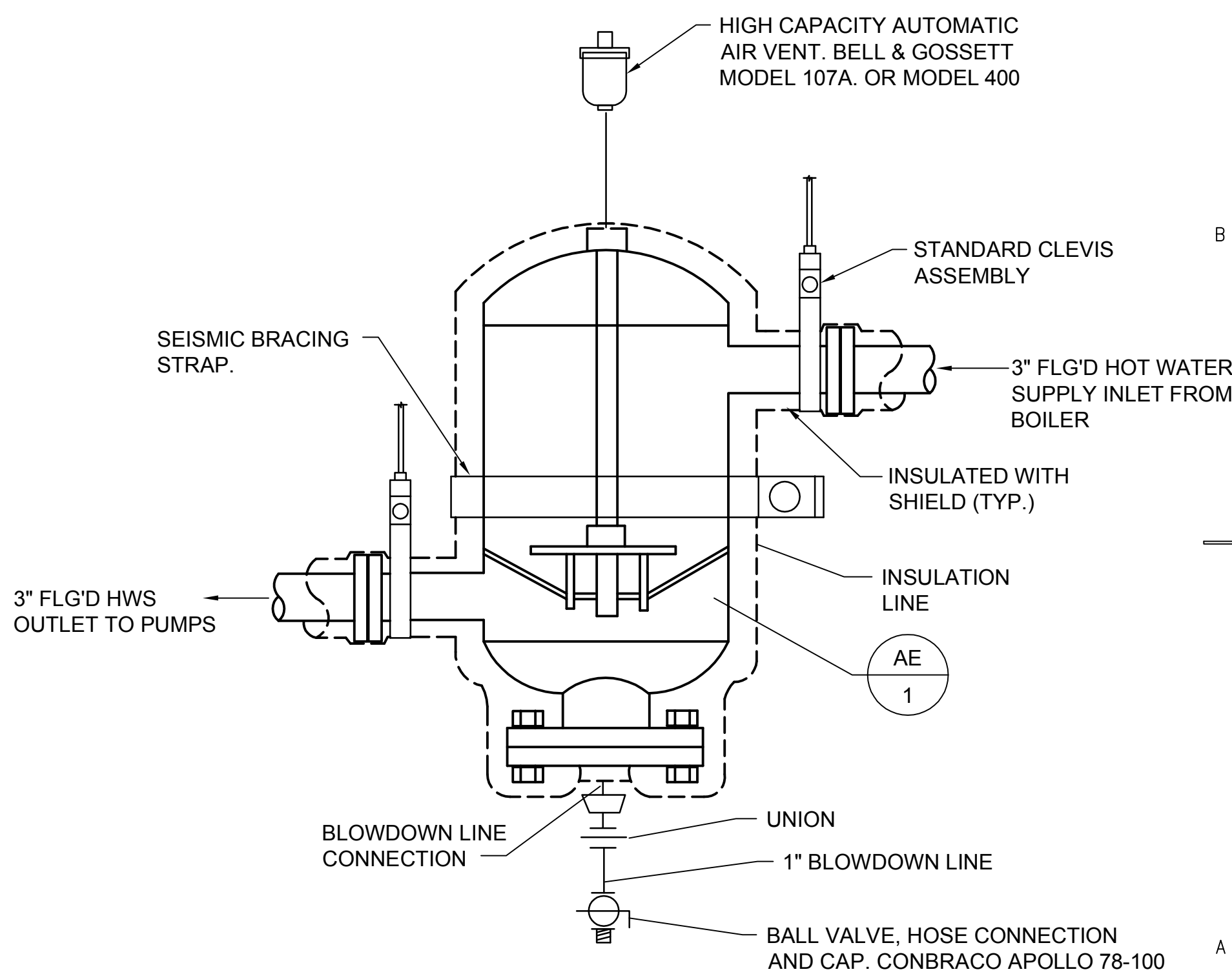
B3 THERMOWELL DETAIL
SCALE: NONE



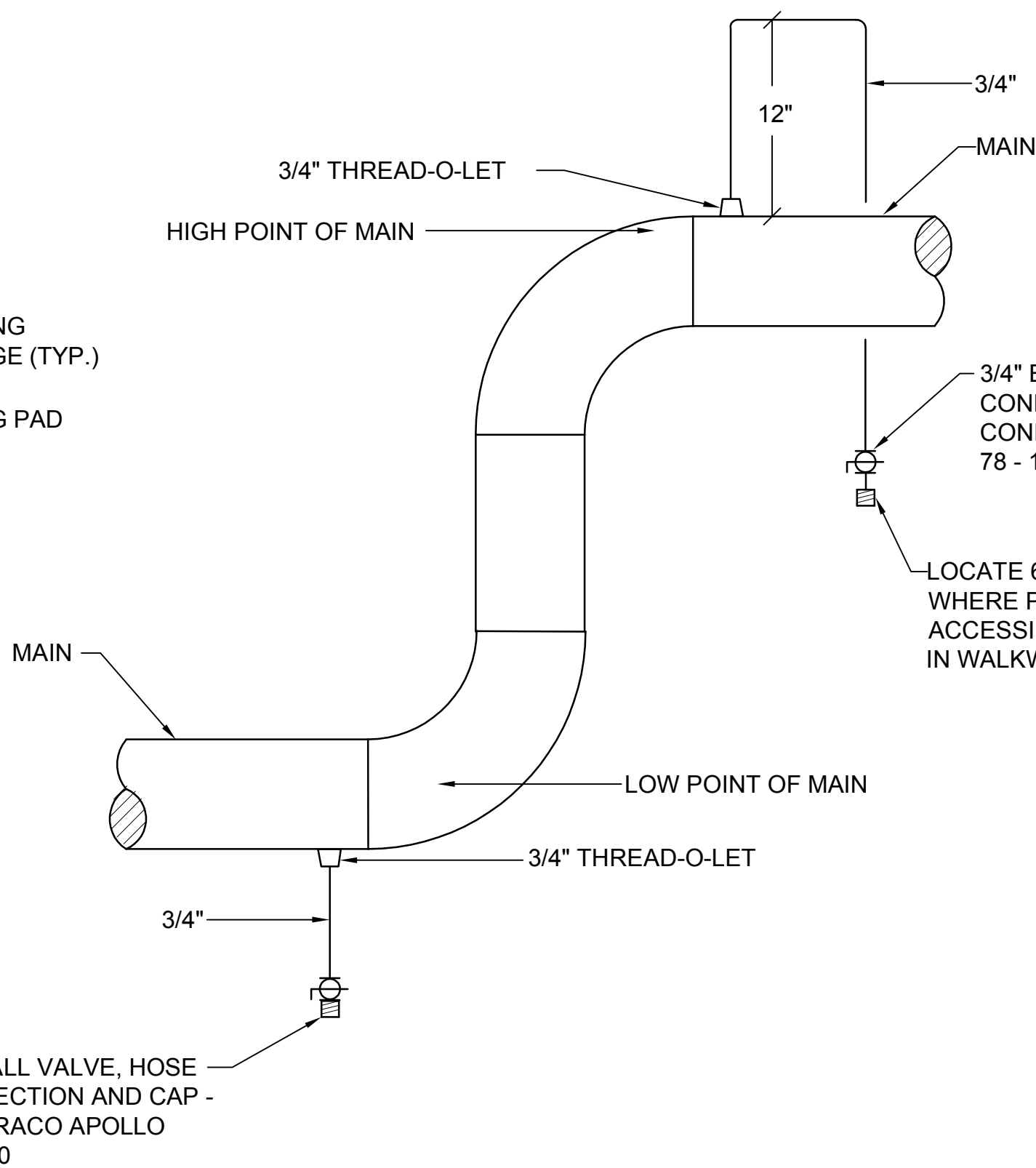
C4 VERTICAL UNIT HEATER PIPING DETAIL
SCALE: NONE



B4 HOT WATER BRANCH CONNECTION DETAIL
SCALE: NONE



A4 AIR ELIMINATOR TANK DETAIL
SCALE: NONE



A2 MANUAL AIR VENT AND DRAIN DETAIL
SCALE: NONE

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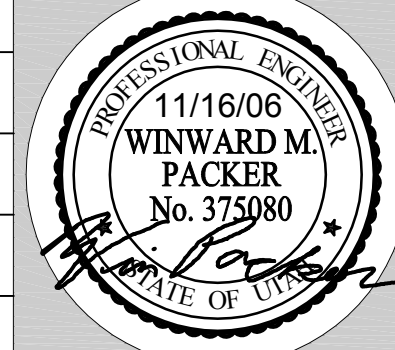
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SHEET TITLE

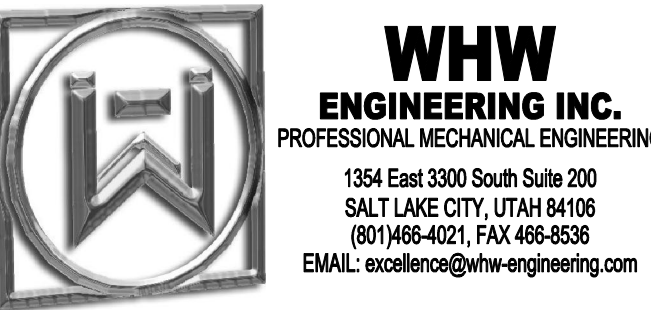
MECHANICAL DETAILS

SHEET NO.

MP501



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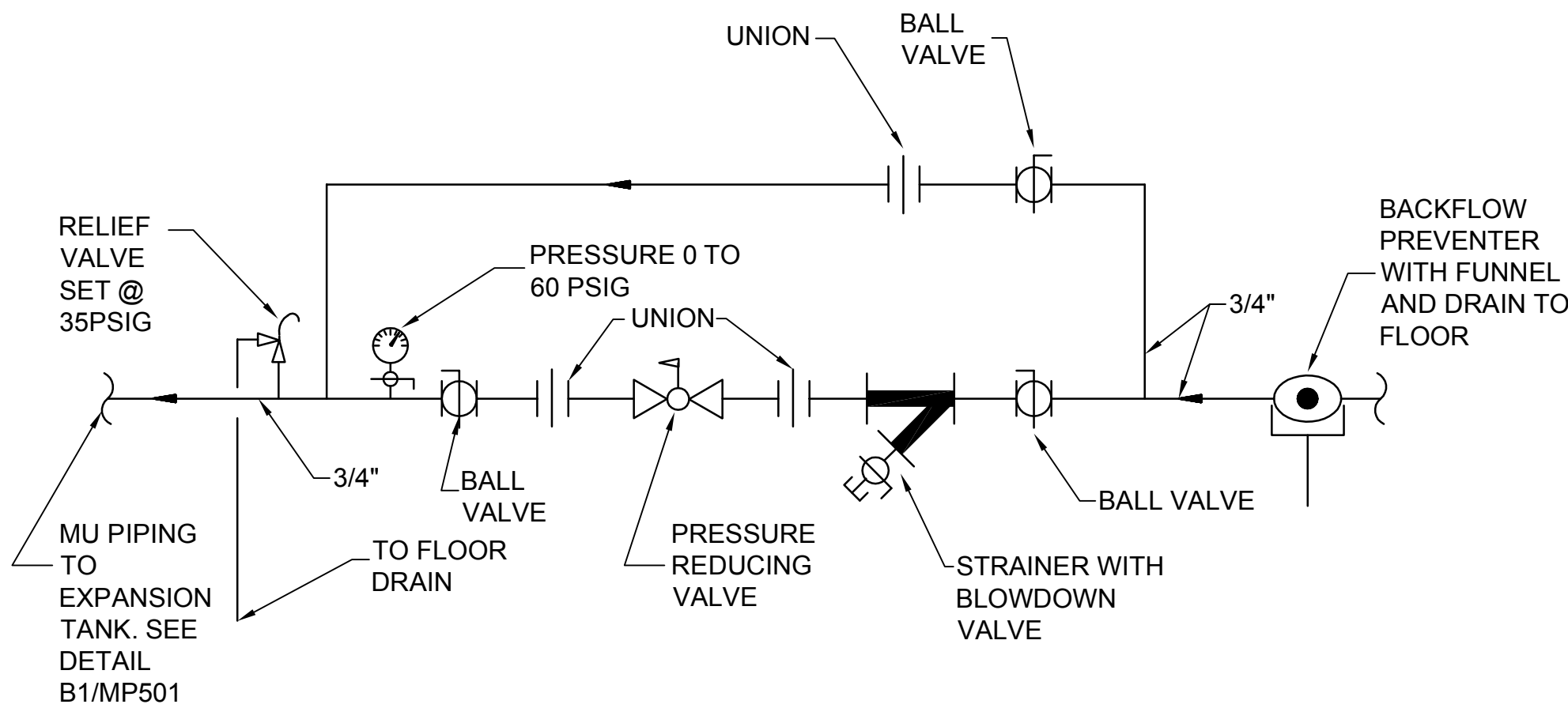
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SHEET TITLE

DETAILS

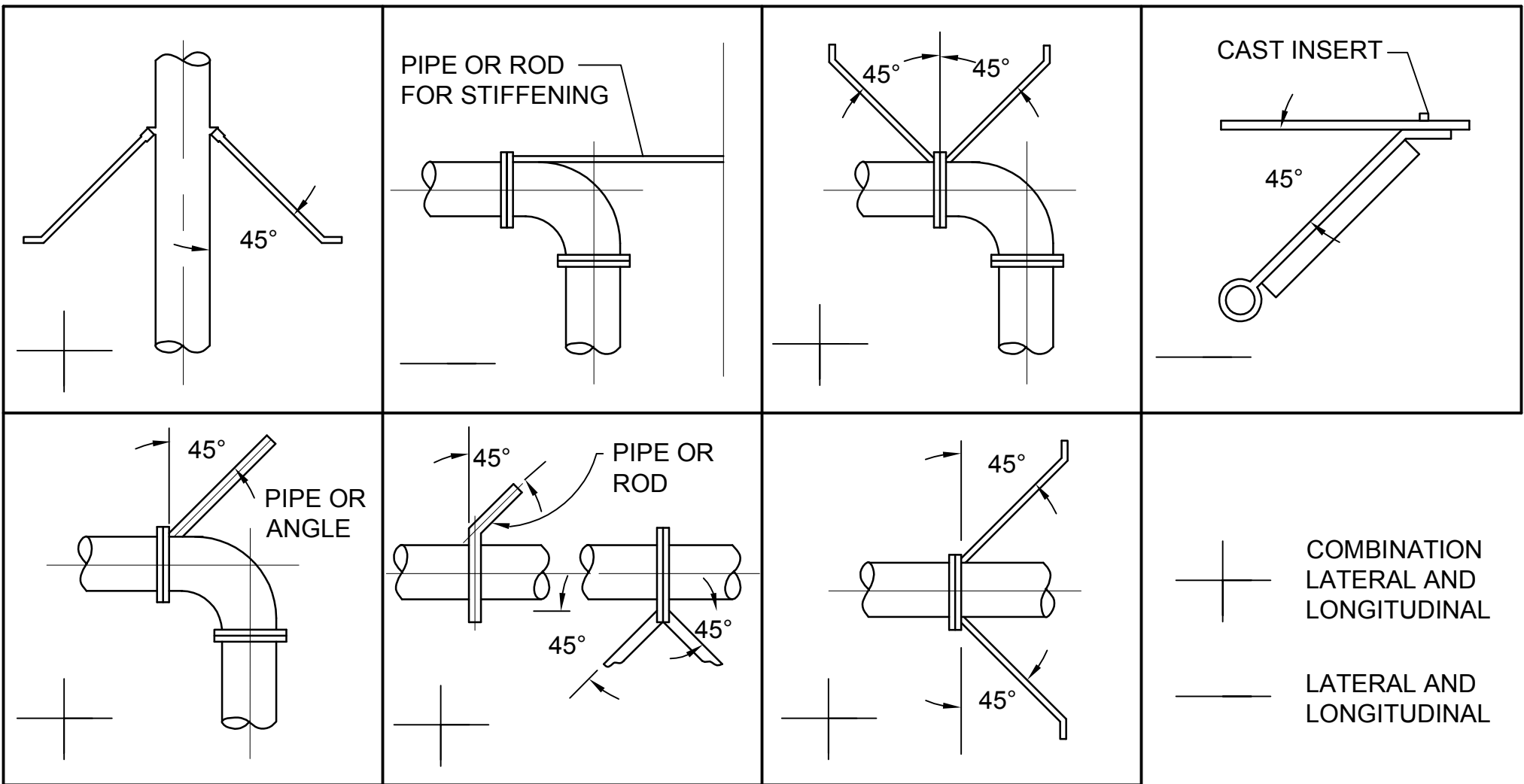
SHEET NO.

MP502



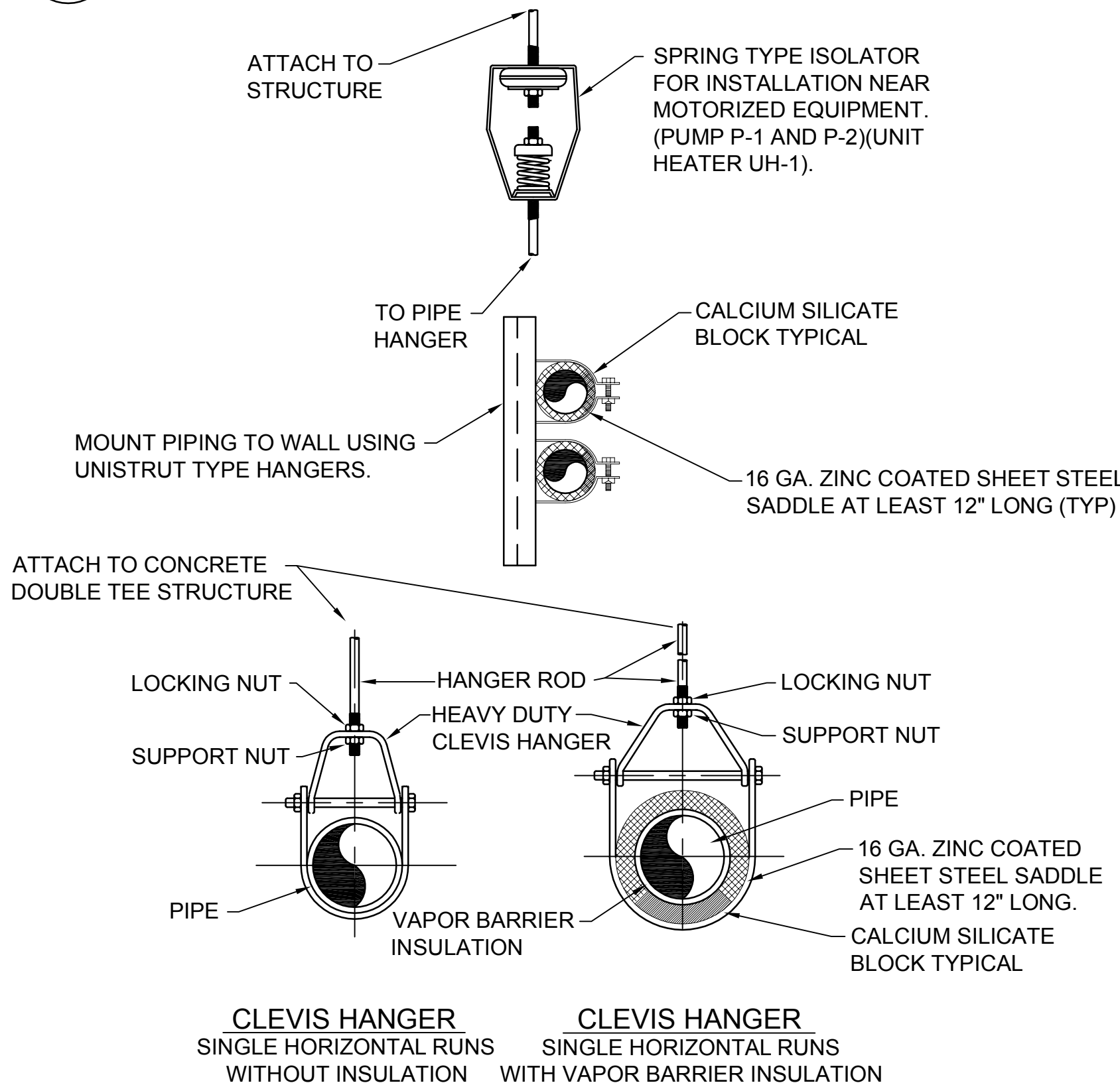
C4 MAKE-UP WATER PRV STATION DETAIL

SCALE: NONE



B4 SEISMIC PIPING SWAY BRACING DETAILS

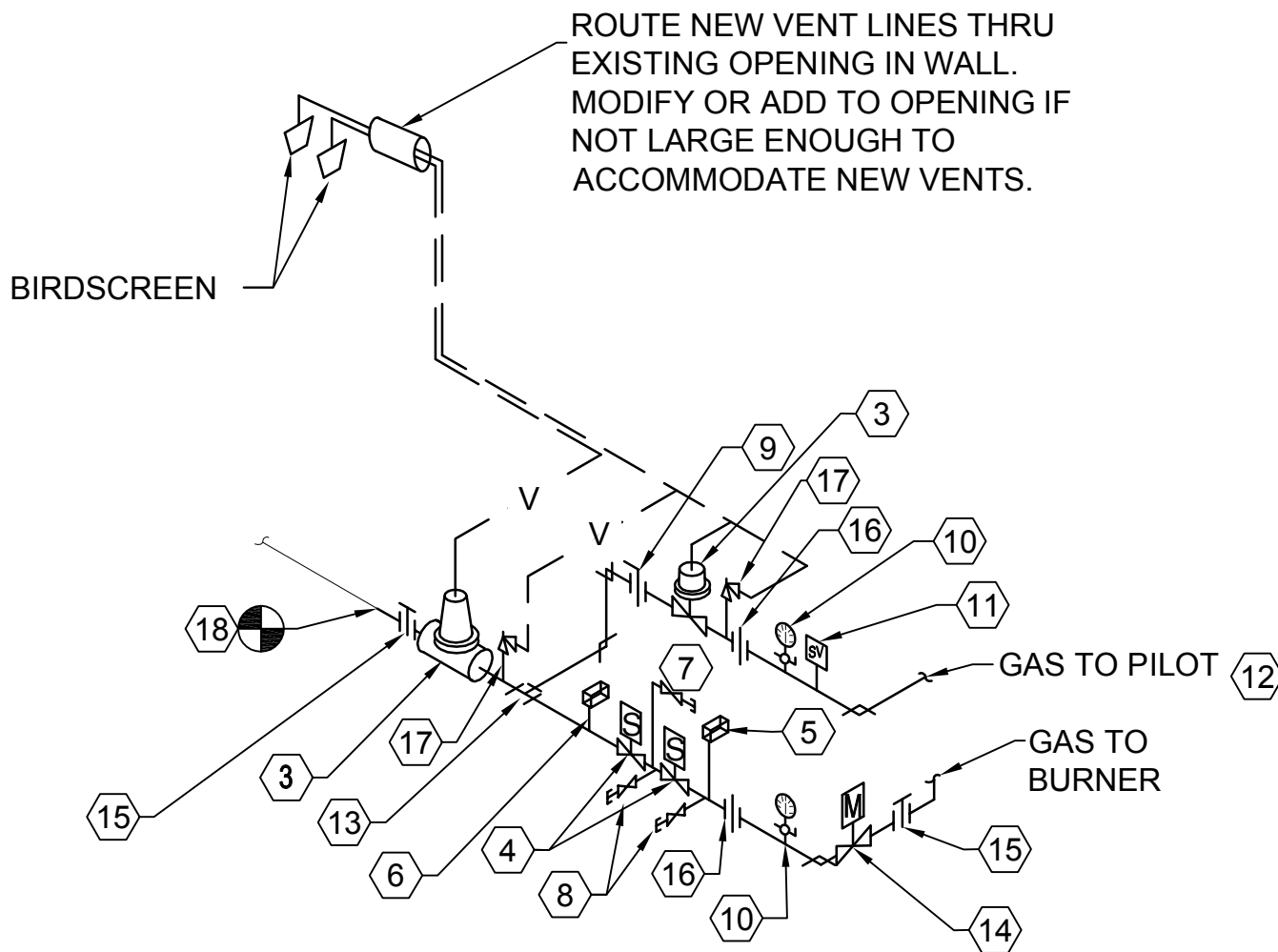
SCALE: NONE



A4 PIPE HANGER DETAIL

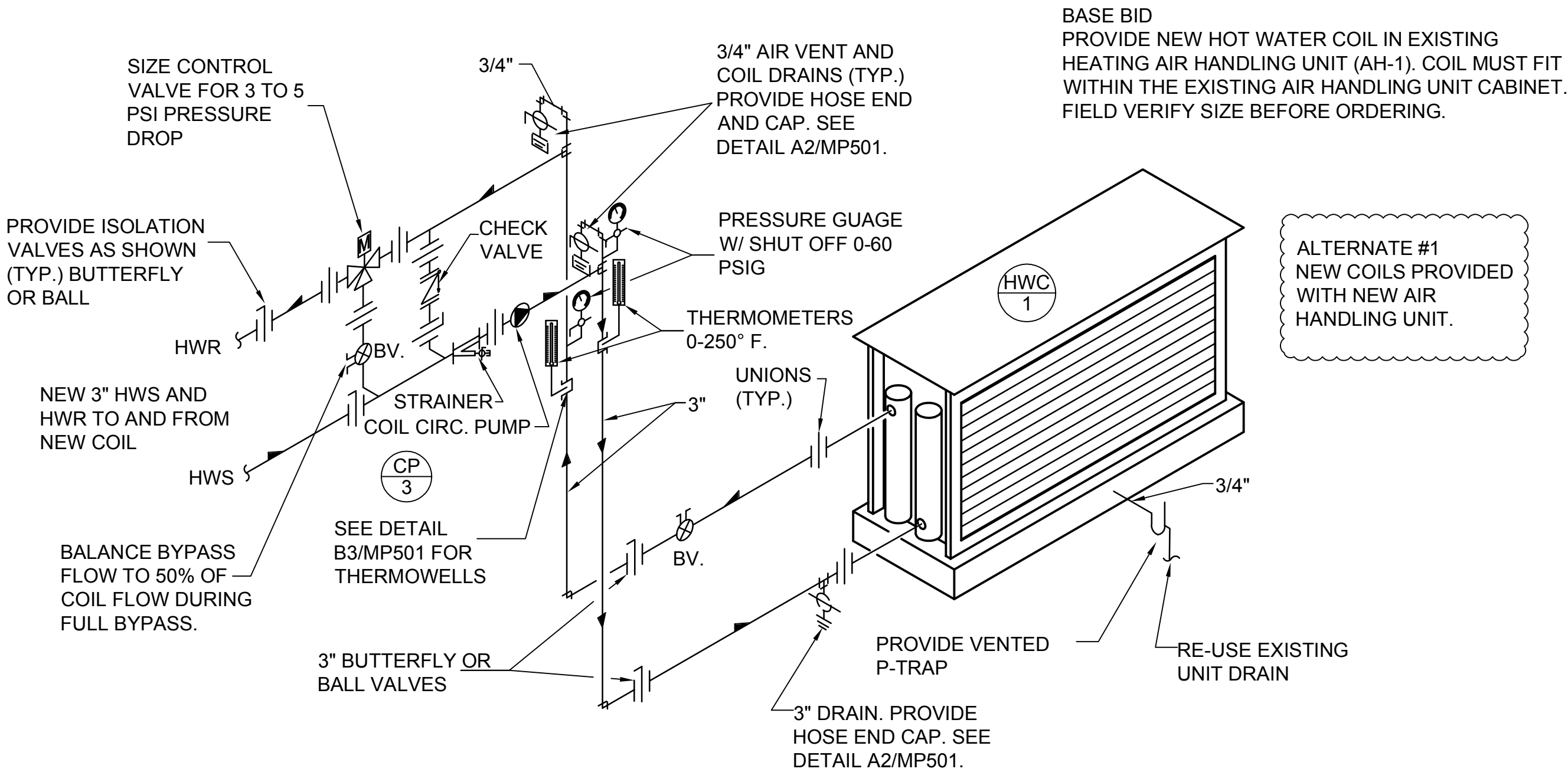
SCALE: NONE

LEGEND	
NO.	ITEM
1	GAS INLET
2	SUPPORT GAS TRAIN FROM PAD OR FLOOR
3	GAS PRESSURE REGULATOR
4	MOTORIZED SAFETY VALVE
5	HIGH PRESSURE SWITCH
6	LOW PRESSURE SWITCH
7	VENT VALVE AND VENT
8	TEST COCK
9	SHUT-OFF COCK
10	PRESSURE GAUGE
11	SOLENOID VALVE
12	GAS TO PILOT
13	GAS TAKE-OFF TO PILOT
14	MOTORIZED MODULATING VALVE
15	SHUT-OFF VALVE
16	UNION
17	RELIEF VALVE-VENT TO ATMOSPHERE
18	CONNECT TO EXISTING GAS LINE THIS LOCATION. SEE SHEET MP401. FIELD VERIFY EXACT LOCATION.



B1 CSD-1 AUTO-IGNITION GAS TRAIN DETAIL


SCALE: NONE



A2 HOT WATER COIL PIPING DETAIL

SCALE: NONE


AIR HANDLING UNIT SCHEDULE

SYMBOL	LOCATION	CFM	O.A. CFM	MAX W (INCHES)	MAX L (INCHES)	MAX H (INCHES)	MAX WEIGHT (LBS)	ESP ARR.	FAN MOTOR				HOT WATER HEATING COIL								MANUF. & MODEL #	SCHEDULE NOTES	
									HP	VOLT	PHASE	CYCLE	MAX AIR PD.	MBH	GPM	EDB	LDB	MAX WATER PD.	WATER INLET TEMP	WATER OUTLET TEMP			AIR TEMP RISE
	ASSEMBLY CEILING	13,580	2,600	92	142	60	1755	.35"	5	230	3	60	0.13	745	75	45	104	10.0	200	180	59	TRANE LPCA	1,2,3

1. MINIMUM 4 ROWS.
2. WATER VELOCITY SHALL BE BETWEEN 1.5 FPS AND 3.0 FPS.
3. PROVIDE WITH SUPPORTS TO HANG FROM CEILING.

ALTERNATE #1

HOT WATER UNIT HEATER SCHEDULE

SYMBOL	BTU OUTPUT	GPM	PRESS. DROP FT/ WATER	CFM	MOTOR HP/ SERVICE	RPM	WEIGHT	DISCHARGE	MAKE AND MODEL #	SCHEDULE NOTES
	30,100	3.1	0.6	950	1/30 HP 120/1 φ/60 1.9 AMPS	1050	36 LBS.	VERTICLE	MODINE V/VN-42	1,2

1. SIZE BASED ON 200°F EWT, 60°F EAT, 20°F WATER DROP.
2. SOUND CLASS 11.

EXPANSION TANK SCHEDULE




SYMBOL	ACCEPT TANK VOLUME GAL.	LENGTH	DIAMETER	OPERATION WEIGHT LBS	COMMENTS	SCHEDULE NOTES
	1000	44"	24"	791	200°F	1,2

1. FOR OTHER APPROVED MANUFACTURERS SEE SPECIFICATIONS.
2. FLOOR MOUNTED VERTICAL EQUAL TO BELL & GOSSETT D-120V

PLUMBING FIXTURE SCHEDULE	
---------------------------	--

SYMBOL	FIXTURE	INDIVIDUAL LINE SIZES					REMARKS
		TRAP	WASTE	VENT	COLD WATER	HOT WATER	
HB-1	HOSE BIBB	-	-	-	1/2"	-	VACUUM BREAKER
H-1	HYDRANT	-	-	-	3/4"	-	NON-FREEZE WALL HYDRANT W/ VACUUM BREAKER

FINTUBE CONVECTOR SCHEDULE

SYMBOL	MBTU	BTU/SQ. FT.	RUNOUT			SIZE	MAKE AND MODEL	COMMENTS
			SUPPLY	RETURN	GPM	LxWxH		
	16.0	177	3/4"	3/4"	1.5	64"x8"x32"	STERLING FS-A 32	FLOOR MOUNTED, OPEN BOTTOM, FLUSH W/ WALL
	11.8	177	3/4"	3/4"	1.1	56"x6"x32"	STERLING FS-A32	FLOOR MOUNTED, OPEN BOTTOM, FLUSH W/ WALL
	16.4	-	3/4"	3/4"	1.7	-	EXISTING	EXISTING


1. BASED ON 200°F EWT AND 180°F LWT WITH 60°F EAT.

DIFFUSER SCHEDULE

SYMBOL	TYPE	MAX CFM	FACE SIZE	CEILING TYPE	MANUFACTURER	SCHEDULE NOTES
<div>S-1</div> <div>CFM</div>	SA	3395	30X24	SIDEWALL	PRICE 152D	1


1. SEE SPECIFICATIONS FOR APPROVED MANUFACTURERS.

HOT WATER COIL SCHEDULE - BASE BID	
------------------------------------	--

SYMBOL	LOCATION	CFM	G.P.M.	H2O PRESS. DROP FT. HEAD	MBH	EWT	LWT	REMARKS
	EXISTING ASSEMBLY HALL AH-1	13,580	80	10	805	200°F	180°F	① REPLACE EXISTING COIL WITH NEW HOT WATER COIL




- ①. NEW COIL SHALL BE ABLE TO FIT IN COIL SPACE OF EXISTING UNIT. FIELD VERIFY DIMENSIONS AND EXACT LOCATION OF EXISTING COIL.

AIR ELIMINATOR SCHEDULE

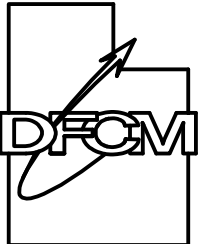
SYMBOL	CAPACITY GPM	MAX PRESSURE DROP FT.	INLET / OUTLET SIZE	WEIGHT LBS	MAKE & MODEL
	116	.67	3" FLG'D	-	BELL & GOSSETT

1. UNIT SCHEDULED IS BELL & GOSSETT MODEL RL. FOR OTHER APPROVED MANUFACTURERS SEE SPECIFICATIONS.

PUMP SCHEDULE	
---------------	--

SYMBOL	TYPE	GPM	FT. HEAD	RPM	SUCTION SIZE	DISCHARGE SIZE	MOTOR			SIZE	SERVICE	MANUFACTURER AND MODEL #	COMMENTS
							V - Ø - Hz	HP	RPM				
	BASE MTD. END SUCTION	116	82	1750	2"	1-1/2"	208/3ø/60	5	1750	1-1/2 BC	HEATING HOT WATER	BELL & GOSSETT 1510	1,2,3
	BASE MTD. END SUCTION	116	82	1750	2"	1-1/2"	208/3ø/60	5	1750	1-1/2 BC	HEATING HOT WATER	BELL & GOSSETT 1510	1,2,3
	INLINE CIRCULATOR	80	15	1750	2"	2"	120/1ø/60	3/4"	1750	60	COIL CIRCULATOR HW	BELL & GOSSET MODEL 60	1,2,3

- | |
|--|
| 1. PROVIDE REMOVABLE INSULATION KIT AROUND PUMP SUCTION |
| 2. ALL PUMPS SHALL BE SIZED IN THE FLAT PART OF THE CURVE. |
| 3. SEE SPECIFICATIONS FOR OTHER APPROVED MANUFACTURERS. |



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CONSULTANTS



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PROJECT NAME & ADDRESS

TOOELE ARMORY

HYDRONIC BOILER SYSTEM AND DOMESTIC WATER PIPING UPGRADE

DFCM No. 06271470

Tooele, Utah

ARK	DATE	REVISION

PROJECT MANAGER
SLW

RAWN BY:
STAFF

CHECKED BY:
SLW

DATE: 11/16/06

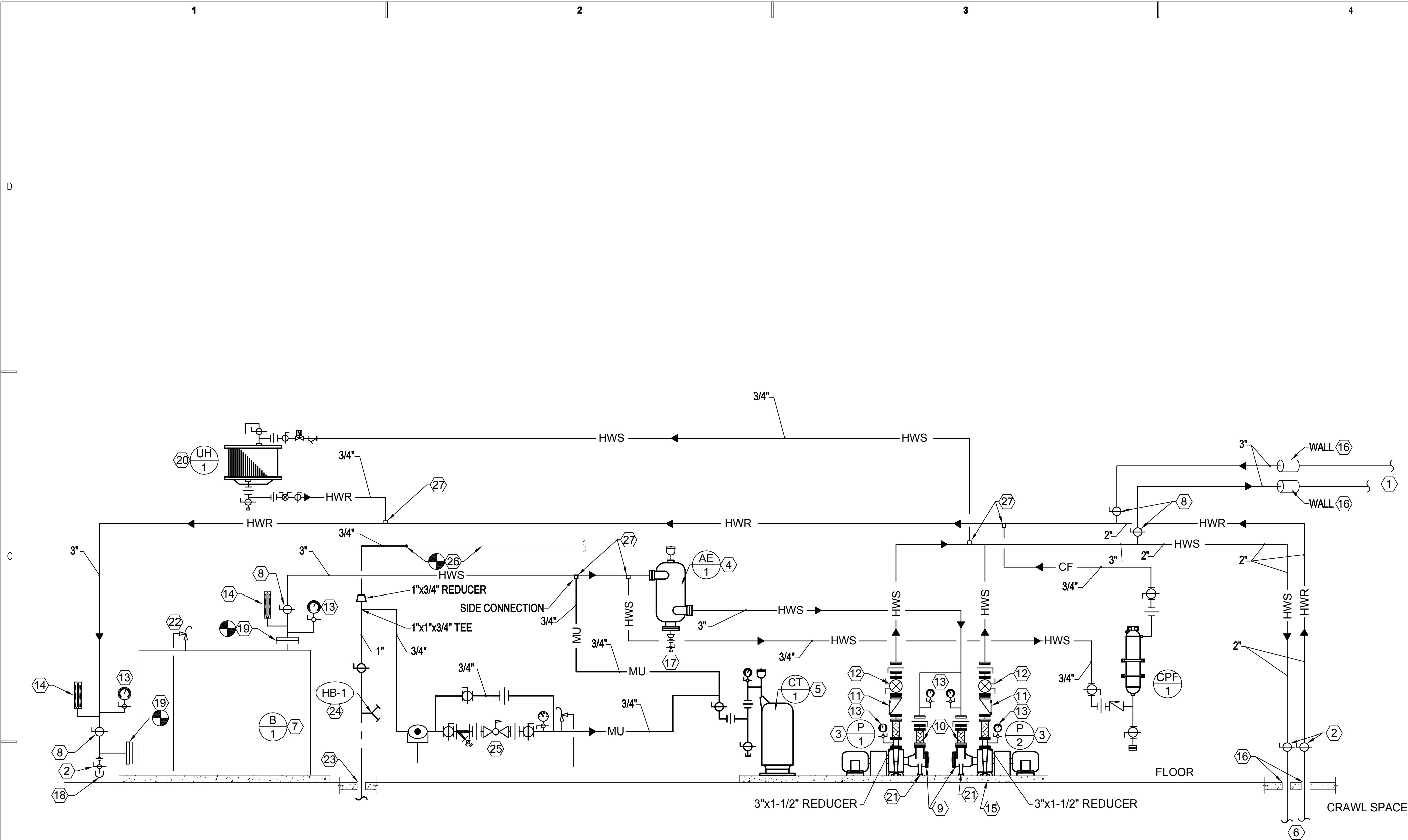
HW JOB NO.:
06021

MEC

MECHANICAL AND PLUMBING SCHEDULES

SHEET NO.

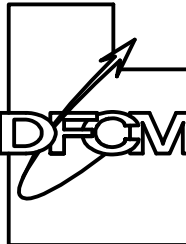
MP601



NEW HOT WATER FLOW SHEET
NO SCALE

SHEET NOTES:

- 1 NEW 3" HWS AND HWR TO HEATING AND VENTILATION UNIT AH-1 IN ASSEMBLY ROOM.
- 2 2" BALL VALVE.
- 3 NEW BASE MOUNTED END SUCTION HOT WATER PUMPS.
- 4 NEW AIR ELIMINATOR. SEE DETAIL A4/MP501.
- 5 NEW FLOOR MOUNTED EXPANSION TANK. SEE DETAIL B1/MP501.
- 6 NEW 2" HWS AND HWR TO CRAWL SPACE TO SERVICE CONVECTOR UNITS.
- 7 EXISTING BOILER SHALL REMAIN.
- 8 NEW 3" BALL VALVE.
- 9 NEW 3"x2" PUMP SUCTION DIFFUSER WITH FLOOR SUPPORT.
- 10 NEW 3" FLEX PUMP CONNECTORS. TYPICAL OF 4.
- 11 NEW 3" WAFER TYPE CHECK VALVE. TYPICAL OF 2.
- 12 NEW 3" BALANCING VALVE. TYPICAL OF 2.
- 13 NEW PRESSURE GAUGE WITH SNUBBER AND SHUT OFF VALVE 0 TO 150 PSIG.
- 14 NEW THERMOMETERS 0° TO 250° F.
- 15 NEW 4" HIGH CONCRETE PAD. SEE DETAIL A1/MP501.
- 16 EXISTING FLOOR AND WALL OPENINGS SHALL REMAIN FOR NEW PIPING. MODIFY IF REQUIRE FOR THE NEW PIPING..
- 17 1" DRAIN FROM AIR ELIMINATOR. COMPLETE WITH COMBRACO SHUT OFF AND HOSE CONNECTION.
- 18 2" TO EXISTING FLOOR DRAIN. CONNECT TO EXISTING DRAIN PIPING BEHIND BOILER
- 19 CONNECT NEW 3" PIPING TO EXISTING BOILER CONNECTIONS. FIELD VERIFY TYPE OF CONNECTIONS. FLANGE, SCREWED, ETC.
- 20 NEW HOT WATER UNIT HEATER. SEE DETAIL C4/MP501 FOR PIPING DETAIL.
- 21 FLOOR SUPPORTS.
- 22 CHANGE BOILER SAFETY RELIEF VALVE DISCHARGE PIPING SO IT ONLY CONTAINS ONE 90° ELL. EXISTING DISCHARGE PIPING VIOLATES CODE. SIZE PIPING FULL LINE. RELIEF VALVE SHALL REMAIN.
- 23 1" COLD WATER SUPPLY FROM CRAWL SPACE BELOW TO SERVE MAKE-UP SYSTEM AND EVAPORATIVE COOLERS. USE SAME FLOOR OPENINGS AS EXISTING. MODIFY OPENING IF REQUIRED. SEE B2/MD103.
- 24 1/2" HOSE BIBB WITH SCREW-ON VACUUM BREAKER.
- 25 PRV STATION FOR MAKE-UP WATER TO HOT WATER SYSTEM. SEE DETAIL C4/MP502.
- 26 NEW CONNECTION TO 3/4" CW LINE SERVING EVAPORATIVE COOLERS. EXISTING CW PIPING FROM THIS POINT ON SHALL REMAIN.
- 27 3/4" THRED-O-LET.



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SLW

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11/16/06

WHW JOB NO.:

06021

SHEET TITLE

NEW HEATING HOT
WATER FLOW SHEET

SHEET NO.

MP701

